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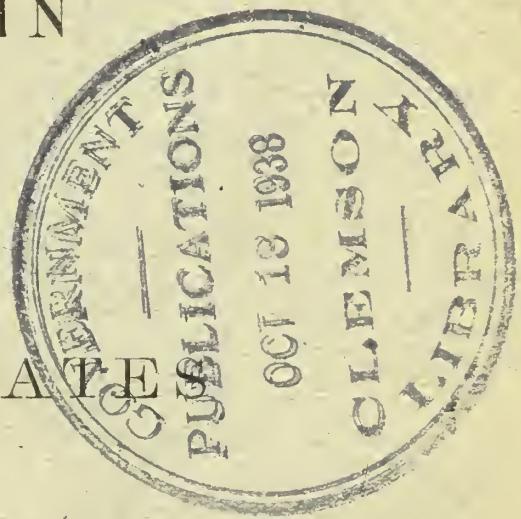
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DEPARTMENT OF THE INTERIOR

BULLETIN

OF THE

UNITED STATES



GEOLOGICAL SURVEY

No. 162

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN  
GEOLOGY, PALEONTOLOGY, PETROLOGY, AND  
MINERALOGY FOR 1898.—WEEKS

WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1899



*J. A. Holmes*  
DEPARTMENT OF THE INTERIOR

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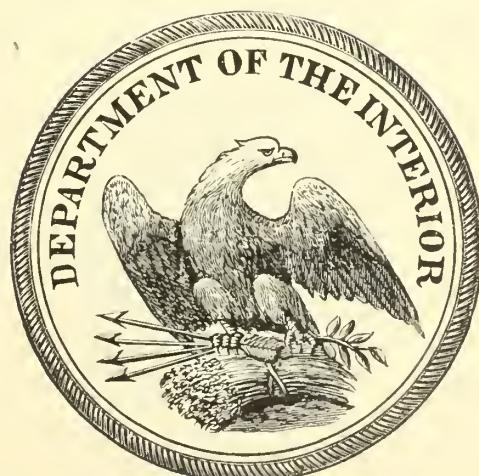
BULLETIN

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1899



UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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BIBLIOGRAPHY AND INDEX

OF

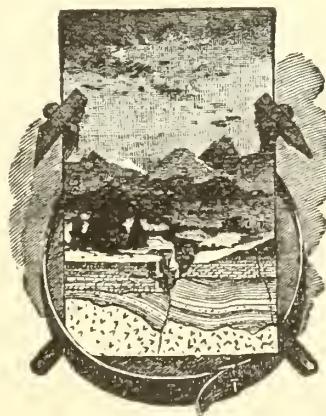
NORTH AMERICAN GEOLOGY, PALEONTOLOGY,  
PETROLOGY, AND MINERALOGY

FOR

THE YEAR 1898

BY

FRED BOUGHTON WEEKS



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1899



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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY.

*Washington, D. C., June 30, 1899.*

SIR: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1898, and to request that it be published as a bulletin of the Survey.

Very respectfully,

F. B. WEEKS.

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1898.

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By FRED BOUGHTON WEEKS.

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## INTRODUCTION.

The method of preparing and arranging the material of the Bibliography and Index for 1898 is similar to that adopted for the previous publications on this subject (Bulletins Nos. 130, 135, 146, 149, and 156). Several papers that should have been entered in the previous bulletins are here recorded, and the date of publication is given with each entry.

*Bibliography.*—The bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated as  $\frac{1}{2}$  p., 5 l. (lines).

*Index.*—The subject headings, their subdivision and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of the useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described, and under Petrology, a list of rocks described, reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

The Index has been added to by a list of chemical analyses of rocks and minerals and a list of names of geologic formations described in the publications examined.



## LIST OF PUBLICATIONS EXAMINED.

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Alabama Industrial and Scientific Society: Proceedings, Vol. VIII, 1898. Tuscaloosa, Ala.

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3 — Nodular granite from Pine Lake [Ontario].  
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Abstract, Science, new ser., vol. vii, p. 82 ( $\frac{1}{2}$  p.); Review, Am. Nat., vol. xxxii, pp. 614-615, 1898.  
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4 — Notes on the geology of Montreal and vicinity.  
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5 — The deformation of rocks under pressure.  
Abstract, Eng. and Mg. Jour., vol. lxv, p. 522, 1898.

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**12 Aldrich (T. H.).** Some new Eocene fossils from Alabama.  
The Nautilus, vol. xi, pp. 97-98, 1898.

**13 Ami (Henry M.).** Note on the physiography and geology of Kings County, Nova Scotia.  
Ottawa Nat., vol. xii, pp. 149-150, 1898.  
Gives brief notes on the geology of the county.

**14 —— The mastodon in western Ontario.**  
Abstract, Science, new ser., vol. vii, p. 80 (1 p.), 1898.

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Describes the megascopic, microscopic, and chemical characters of two varieties of eruptive rock.

**16 Ashley (George H.).** Note on an area of compressed structure in western Indiana.  
Geol. Soc. Am., Bull., vol. ix, pp. 429-430, 4 figs., 1898; Abstracts, Jour. of Geol., vol. vi, pp. 118-119; Science, new ser., vol. vii, p. 84 (9 l.), 1898.  
Describes occurrence in the Indiana coal field.

**17 —— Note on fault structure in Indiana.**  
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Describes faults in the Coal Measures of Indiana.

**18 —— Blatchley (W. S.) and.** Geological scale of Indiana.  
See Blatchley (W. S.) and Ashley (G. H.), No. 92.

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Abstract, Eng. and Mg. Jour., vol. lxv, p. 370 (1 p.), 1898.  
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 Mines and Minerals, vol. xviii, pp. 268-272, 1898.  
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 Describes occurrence of nickel at this locality.

22 — The nickel deposits near Riddles, Oregon.  
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 See Bibliography and Index for 1896, No. 18.

23 — [Telluride veins in the La Plata Mountains [Colorado].  
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**B.**

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26 — [Foraminiferal deposits near Bujio and on the Empire limestone, Isthmus of Panama.]  
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28 — See **Clark** (W. B.), No. 152.

29 **Bailey** (L. W.). Triassic (?) rocks of Digby Basin [Nova Scotia].  
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 Discusses the age of the rocks of the region.

30 — Report on the geology of southwest Nova Scotia, embracing the counties of Queens, Shelburne, Yarmouth, Digby, and part of Annapolis.  
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31 **Bailey** (L. W.) The Bay of Fundy trough in American geological history.  
 Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv., pp. 107-116, 1898.  
 Discusses the geologic history of the region.

32 — Some typical sections in southwestern Nova Scotia.  
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 Contains brief notes on the stratigraphy and structure of the region.

33 **Bain** (Harry Foster). Geology of Polk County [Iowa].  
 Iowa Geol. Surv., vol. vii, pp. 265-412, pls. vii-ix, figs. 38-66, with geologic map, 1897.  
 Describes the physiography, the occurrence, and character of the Carboniferous and Pleistocene strata, and the occurrence of coal, clay, and road materials.

34 — Geology of Guthrie County [Iowa].  
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 Describes the physiographic features, the occurrence, and character of the Carboniferous, Cretaceous, and Pleistocene formations, and the occurrence of coal and clays.

35 — Preliminary outline map of the drift sheets of Iowa.  
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36 — Geology of Decatur County [Iowa].  
 Iowa Geol. Surv., vol. viii, pp. 258-309, pls. xxi-xxiv, figs. 9-10, with geologic map, 1898.  
 Describes the physiographic features, the occurrence, and character of the Carboniferous and Pleistocene formations, and the occurrence of coal, clay, and building stone.

37 — Geology of Plymouth County [Iowa].  
 Iowa Geol. Surv., vol. viii, pp. 318-366, pls. xxv-xxix, fig. 13, with geologic map, 1898.  
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38 — Properties and tests of Iowa building stones.  
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39 — The Bethany limestone, at Bethany, Missouri.  
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42 — [Review of "Clay deposits and clay industry in North Carolina," by Heinrich Ries.]

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43 — [Review of "Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1896," by F. B. Weeks, and "Bibliografía geológica y minera de la República Mexicana," by R. Aguilar y Santillan.]

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Ind. Acad. Sci., Proc., 1896, pp. 72-73, 1897.

Traces the course of the watershed in northern Indiana.

47 — Some notice of streams, wells, and sand ridges in Lake County, Indiana.

Ind. Acad. Sci., Proc., 1896, pp. 73-75, 1897.

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48 **Ballou** (William H.). The serpentlike sea saurians.

Pop. Sci., Mo., vol. liii, pp. 209-225, 8 figs., 1898.

Describes the distribution and gives illustrations of saurians of recent and geologic time.

49 **Barbour** (Erwin Hinckley). Notes on the ash beds of Nebraska and the Great Plains.

The Mineral Industry for 1897, pp. 22-25, 5 figs., 1898.

Describes the character and occurrence of the volcanic ash beds.

50 **Barlow** (A. E.) and **Ferrier** (W. F.). On the relations and structure of certain granites and associated arkoses of Lake Temiscaming, Canada.

Brit. Assoc. Adv. Sci. Rept. 1897, pp. 659-660, 1898.

Describes the microscopic characters and relations of the rocks.

51 **Barrell** (R. W.). Gold mining in Oregon.

Mines and Minerals, vol. xix, pp. 12-15, 5 figs., 1898.

Describes the topographic features of eastern Oregon and the occurrence of gold.

52 **Bascom** (Florence). [Review of "Maryland Geological Survey, vol. i, 1897."]

Am. Geol., vol. xxii, pp. 375-377, 1898.

53 —— See **Diller** (J. S.), No. 234.

54 **Bather** (F. A.). Wachsmuth and Springer's classification of crinoids.

Nat. Sci., vol. xii, pp. 337-345, 1898.

55 **Bayley** (W. S.). See **Diller** (J. S.), No. 234.

56 **Becker** (George F.). Reconnaissance of the gold fields of southern Alaska, with some notes on general geology.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 7-86, pls. i-xxxii, figs. 1-6, 1898.

Includes notes on some igneous rocks and on the glacial features and volcanic phenomena of the region. Describes the occurrence and character of the auriferous deposits and veins.

57 —— The Witwatersrand basket, with notes on other gold-bearing pudding stones.

U. S. Geol. Surv., 18th Ann. Rept., Pt. V, pp. 153-184, 1 fig.; Review Zeit. für prak. Geol., Heft 6, pp. 212-217, 1898.

Includes notes on auriferous conglomerates occurring in the United States.

58 —— Auriferous conglomerates of the Transvaal.

Am. Jour. Sci., 4th ser., vol. v, pp. 193-208, 1898.

In describing the character of the conglomerates and the origin of gold, refers to the river gravels and beach sands of California.

59 —— On the determination of plagioclase feldspars in rock sections.

Am. Jour. Sci., 4th ser., vol. v, pp. 349-354, pl. iii, 1898.

Reviews Michel-Levy's method of determining plagioclase feldspars.

60 **Beecher** (Charles E.). Origin and significance of spines. A study in evolution.

Am. Jour. Sci., 4th ser., vol. vi, pp. 1-20, pl. i, figs. 1-31; 125-136; 249-268, figs. 32-50; 329-359, figs. 51-73, 1898.

Discusses the origin, growth, development, and significance of spines. Includes a bibliography of the subject.

61 **Beede** (J. W.). New corals from the Kansas Carboniferous.

Kan. Univ. Quart., vol. vii, pp. 16-18, 1898.

Describes four new species.

62 —— Variations of external appearance and internal characters of *Spirifer cameratus* Morton.

Kan. Univ. Quart., vol. vii, pp. 103-105, pl. vi, fig. 1-3, 1898.

63 **Beede** (J. W.). Notes on *Campophyllum torquium* Owen, and a new variety of *Monopteria gibbosa* Meek and Worthen.  
Kan. Univ. Quart., vol. vii, pp. 187-190, 5 figs., 1898.

64 — Preliminary notice on the correlation of the Meek and Marcou section at Nebraska City, Nebraska, with Kansas Coal Measures.  
Kan. Univ. Quart., vol. vii, pp. 231-233, 1898.  
Discusses the evidence for the correlation of the Nebraska City beds with Coal Measures at Topeka, Kansas.

65 — The stratigraphy of Shawnee County [Kansas].  
Kan. Acad. Sci., Trans., vol. xv, pp. 27-34, 1898.  
Names and describes a number of subdivisions of the Coal Measures.  
Gives a list of fossils collected.

66 — The McPherson Equus beds.  
Kan. Acad. Sci., Trans., vol. xv, pp. 104-110, pl. vi, and map and sections, 1898.  
Describes the topography of a part of central Kansas and the character, occurrence, and origin of the Equus beds.

67 — Notes on Kansas physiography.  
Kan. Acad. Sci., Trans., vol. xv, pp. 114-120, pls. vii-ix, 1898.  
Describes the physiographic features as determined by the geologic structure, rocks, and climate.

68 **Bell** (Robert). Report on the geology of the French River sheet, Ontario.  
Canada Geol. Surv., new ser., vol. ix, Rept. I, 29 pp., 1898.  
Describes the occurrence and character of the granite, Laurentian, Huronian, and Silurian rocks and glacial phenomena.

69 — On the occurrence of mammoth and mastodon remains around Hudson Bay.  
Geol. Soc. Am., Bull., vol. ix, pp. 369-390, 1 fig., 1898.  
Describes the occurrence, migration, disappearance of the mammoth and mastodon, the character of the Pleistocene deposits southwest of James Bay, and the discovery of mastodon bones in other parts of Canada.

70 — Fossil-like forms in the Sault Ste. Marie sandstone.  
Abstract, Science, new ser., vol. vii, p. 80 (12 l.), 1898.

71 **Benedict** (A. C.). The Bayport, Michigan, quarries.  
Stone, vol. xvii, pp. 153-164, 5 pls., 1898.  
Describes the character and occurrence of the St. Louis limestone at the locality, and its value as a building stone and for road material.

72 **Bennett** (L. F.). Four comparative cross sections of the Knobstone group of Indiana.  
Ind. Acad. Sci., Proc. 1897, pp. 258-262, 1898.  
Describes the character of the formation and compares the sections as drawn.

73 **Berkey** (Charles P.). *Geology of the St. Croix Dalles. II [Wisconsin].*  
 Am. Geol., vol. xxi, pp. 139-155, pls. xii-xiii, 1898.  
 Describes the igneous rocks and minerals and presents a geologic map of the region.

74 —— *Geology of the St. Croix Dalles. III, Paleontology.*  
 Am. Geol., vol. xxi, pp. 270-294, pls. xvii-xxi, 1898.  
 Gives lists of fossils collected from the different beds and describes a number of new species. Includes a geologic map.

75 **Bernard** (Felix). *The principles of paleontology (extracted from Bernard's Eléments de Paléontologie, Paris, 1895).*  
 N. Y., 14th Ann. Rept. State Geologist, pp. 131-215, 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 131-215, 1897.

76 **Beyer** (Samuel Walker). *Geology of Marshall County [Iowa].*  
 Iowa Geol. Surv., vol. vii, pp. 199-262, pls. v-vi, figs. 25-37, with geologic map, 1897.  
 Describes the physiographic and drainage features, the occurrence and character of the Carboniferous subdivisions, and the occurrence of building stones and clay.

77 **Bibbins** (Arthur). *A fossil cypress swamp in Maryland.*  
 The Plant World, vol. i, pp. 164-166, 1 pl., 1898.  
 Describes occurrence on Chesapeake Bay in Cretaceous strata.

78 **Birkinbine** (John). *Iron ores.*  
 U. S. Geol. Surv., 19th Ann. Rept., pt. vi, pp. 23-63, pls. i-xi, 1898.  
 Includes statistics of production, analyses of iron ores, notes on the Marquette iron range, by James E. Jopling, and notes on the iron ores of Alabama, by Henry McCalley.

79 —— *Manganese ores.*  
 U. S. Geol. Surv., 19th Ann. Rept., pt. vi, pp. 91-125, 1898.  
 Includes statistics of production and notes on the manganese ores of Virginia, by Charles Catlett.

80 **Bishop** (Irving P.). *The structural and economic geology of Erie County [New York].*  
 N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 17-18, 305-392, pls. i-xvi, figs. 1-6, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 305-392, pls. i-xvi, figs. 1-6, 1898.  
 Describes the physiography, the character, and occurrence of the Silurian and Devonian subdivisions, the glacial phenomena, and the occurrence of building stones and natural gas, with data of the well borings.

81 **Blake** (William P.). *Oscillations of level of the Pacific coast of the United States.*  
 Am. Geol., vol. xxi, pp. 164-165, 1898.  
 Describes occurrence of Ocoya Creek formation and its bearing on the evidence of a recent uplift of the region.

82 —— *Anthracite coal in Arizona.*  
 Am. Geol., vol. xxi, pp. 345-346, 1898.  
 Describes occurrence of coal in beds of Carboniferous age and gives a chemical analysis.

83 **Blake** (William P.). Remains of a species of *bos* in the Quarternary of Arizona.  
Am. Geol., vol. xxii, pp. 65-72, 1898.  
Describes horn cores and reviews the literature describing similar material.

84 —— *Bison latifrons* and *Bos arizonica*.  
Am. Geol., vol. xxii, pp. 247-248, 1898.  
Refers to remains recently described by Dr. Allen.

85 —— Native sodium carbonate.  
Eng. and Mg. Jour., vol. lxv, p. 188 ( $\frac{1}{2}$  p.), 1898.  
Describes occurrence of soda in northern Mexico.

86 —— Wolframite in Arizona.  
Eng. and Mg. Jour., vol. lxv., p. 608 ( $\frac{1}{2}$  p.), 1898.  
Contains brief notes on occurrence in Cochise County.

87 **Blandy** (John F.). Mining in Yavapai County, Arizona.  
Eng. and Mg. Jour., vol. lxvi, pp. 547-548, 1898.  
Describes the general geology of the region and the occurrence of precious metals.

88 **Blatchley** (W. S.). The geology of Lake and Porter counties, Indiana.  
Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 25-104, pls. iii-viii, 1898.  
Describes the physiography, the Devonian and Silurian rocks, and the glacial and recent geologic features of the region. Gives sections of artesian wells.

89 —— The clays and clay industries of northwestern Indiana.  
Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 105-153, pls. ix-xi, 1898.  
Describes the character, origin, varieties and properties of clays and the clays and clay industries of the region.

90 —— The petroleum industry in Indiana in 1897.  
Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 155-184, pls. xii-xiii, 1 fig., 1898.  
Describes the mode of formation of oil in the Trenton limestone in Indiana.

91 —— See **Oliphant** (F. H.), No. 580.

92 —— and **Ashley** (George H.). Geological scale of Indiana.  
Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 17-23, pl. ii, 1898.  
Gives a brief description of each of the formations occurring in the State.

93 **Boss** (C. M.). Some dike features of the Gogebic iron range [Michigan-Wisconsin].  
Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 556-563, 1898.  
Gives local details regarding the dikes of the region.

94 **Bownocker** (J. A.). The paleontology and stratigraphy of the Corniferous rocks of Ohio.  
 Dennison Univ., Sci. Lab., Bull., vol. xi, art. ii, pp. 12-40, pls. ii-viii, 1898.  
 Describes the stratigraphy and gives lists of fossils found at various localities.

95 **Boyer** (Charles S.). See **Woolman** (L.), No. 934.

96 **Branner** (John C.). The cement materials of southwest Arkansas.  
 Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 42-63, figs. 1-6, 1898.  
 Describes the occurrence of the chalk beds and gives chemical analyses of the material.

97 — On the origin of novaculites and related rocks.  
 Jour. of Geol., vol. vi, pp. 368-371, 1898.  
 Gives a summary of the views of various authors as to the origin of these rocks, with a brief statement of the writer's conclusions.

98 — Geology and its relations to topography.  
 Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 53-78, 94-95, 16 figs., 1898.  
 Describes the internal changes which rocks undergo, the character and mode of operation of the destructive agencies, and the resulting topographic forms.

99 **Brewer** (William M.). Harrison Lake, British Columbia.  
 Eng. and Mg. Jour., vol. lxv, p. 640 ( $\frac{1}{2}$  p.), 1898.  
 Contains brief notes on the occurrence of gold and copper in the region.

100 — The Sandon district, British Columbia.  
 Eng. and Mg. Jour., vol. lxv, pp. 731-732, 2 figs., 1898.  
 Describes the occurrence of the silver-lead ores of the region.

101 — Rossland, British Columbia.  
 Eng. and Mg. Jour., vol. lxvi, pp. 40-41, 1 fig., 1898.  
 Includes brief notes on the geologic occurrence of the ore bodies.

102 — Prospecting on the upper Lillooet, British Columbia.  
 Eng. and Mg. Jour., vol. lxvi, pp. 62-63, 185, 1898.  
 Includes notes on the general geology of the region.

103 — Pemberton meadows and the Blackwater, British Columbia.  
 Eng. and Mg. Jour., vol. lxvi, p. 281, 1898.  
 Describes the general geologic features of the region.

104 — Lillooet River and the Squamish trail, British Columbia.  
 Eng. and Mg. Jour., vol. lxvi, p. 515, 1 fig., 1898.  
 Gives notes on the general geology of the region and the occurrence of gold.

105 **Brigham** (Albert Perry). Topography and glacial deposits of Mohawk Valley [New York].  
 Geol. Soc. Am., Bull., vol. ix, pp. 183-210, pl. xv, figs. 1-2; Abstracts, Jour. of Geol., vol. vi, pp. 211-212; Science, new ser., vol. viii, p. 50 ( $\frac{1}{2}$  p.), 1898.  
 Describes the pre-Glacial drainage and drift deposits of the region.

**106 Brigham** (Albert Perry). Note on trellised drainage in the Adirondacks.  
 Am. Geol., vol. xxi, pp 219-222, pl. xv, 1898.  
 Discusses the drainage of a portion of the Adirondack region.

**107 Broadhead** (Garland C.). Geology of Boone County [Missouri].  
 Mo. Geol. Surv., vol. xii, Pt. III, pp. 375-388, pls. xii-xiii, 1898.  
 Describes the physiographic features, the character and occurrence of the Ozark series, Osage series, and Keokuk group, and includes a geologic map of the area.

**108** — The Ozark uplift and growth of the Missouri Paleozoic.  
 Mo. Geol. Surv., vol xii, Pt. III, pp. 391-409, 1898.  
 Describes the general character of the Ozark uplift and the geologic history of the region.

**109** — Maj. Frederick Hawn.  
 Am. Geol., vol. xxi, pp. 267-269, pl. xvi, 1898.  
 Gives a sketch of his life and a list of published papers.

**110 Brooks** (Alfred H.), **Wolff** (J. E.) and. The age of the Franklin white limestone of Sussex County, New Jersey.  
 See Wolff (J. E.) and Brooks (A. H.), No. 931.

**111 Brown** (Lucius P.). The phosphate-rock deposits of Tennessee during 1897.  
 U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (Continued), pp. 547-555, 1898.  
 Describes the character and origin of the Tennessee phosphate deposits.

**112 Brown** (R. G.). A mineralized dike [Mexico].  
 School of Mines Quart., vol. xix, pp. 90-93, 4 figs., 1897.  
 Describes the occurrence of the dike rock and its mineralization.

**113 Browne** (Ross E.). The mother lode of California.  
 Mg. and Sci. Press, vol. lxxvi, pp. 105-106, 5 figs., 1898.  
 Describes the characteristic features of the mother lode and the occurrence of gold.

**114 Brush** (George J.). Manual of determinative mineralogy, with an introduction on blowpipe analysis. Revised and enlarged, with entirely new tables for the identification of minerals, by Samuel L. Penfield.  
 John Wiley & Sons, New York, 15th edition, 1898.  
 Review by J. P. Iddings, Jour. of Geol., vol. vi, pp. 757-758, 1898.

**115 Bryson** (John). Drift formations of Long Island [New York].  
 Am. Geol., vol. xxii, pp. 245-247, 1898.  
 Describes certain features of the terminal moraine.

**116 Butts** (Edward). Description of some new species of crinoids from the Upper Coal Measures of the Carboniferous age at Kansas City, Missouri.  
 Kansas City Acad. Sci., Trans., vol. i, pp. 13-15, 1 pl., 1898.  
 Describes two new species.

## C.

117 **Cabrera** (Raimundo). Mineral resources of Cuba. Translated from the Spanish, by Louis Edward Levy.  
 Franklin Inst., Jour., cxlv, pp. 26-41; Abstracts, Eng. and Mg. Jour., vol. lxvi, pp. 308-309; Mines and Minerals, vol. xix, pp. 158-159, 1898.  
 Describes occurrence of asphaltum, copper, iron, manganese, and gold.

118 **Call** (R. Ellsworth). The hydrographic basins of Indiana and their molluscan fauna.  
 Ind. Acad. Sci., Proc. 1896, pp. 247-257, with map, 1897.  
 Describes the drainage systems of Indiana.

119 **Calvin** (Samuel). Fifth Annual Report of the State Geologist [Iowa].  
 Iowa Geol. Surv., vol. vii, pp. 11-27, pl. i, 1897.  
 Gives a review of the work of the members of the survey and includes a geologic map of the State.

120 —— Geology of Johnson County [Iowa].  
 Iowa Geol. Surv., vol. vii, pp. 35-104, pl. iii, figs. 1-9, with geologic map, 1897.  
 Describes the physiography, drainage systems, the character and occurrence of the Silurian, Devonian, Carboniferous, and Pleistocene formations, and the occurrence of building stones.

121 —— Geology of Cerro Gordo County [Iowa].  
 Iowa Geol. Surv., vol. vii, pp. 119-195, figs. 10-24, with geologic map, 1897.  
 Describes the physiographic and drainage features, the occurrence and character of the Devonian, Carboniferous, and Pleistocene formations, and the occurrence of building stones and clays.

122 —— Sixth Annual Report of the State Geologist [Iowa].  
 Iowa Geol. Surv., vol. viii, pp. 11-23, pl. ii, 1898.  
 Gives a sketch of the geologic work of the survey during 1897 and a geologic map of the State.

123 —— Geology of Delaware County [Iowa].  
 Iowa Geol. Surv., vol. viii, pp. 121-192, pls. vii-xiii, with geologic map, 1898.  
 Describes the physiography, the occurrence and character of the Ordovician, Silurian, Devonian, Cretaceous, and Pleistocene formations, and the occurrence of building stones, clay, and road material.

124 —— Geology of Buchanan County [Iowa].  
 Iowa Geol. Surv., vol. viii, pp. 203-253, pls. xiv-xx, with geologic map, 1898.  
 Describes the physiographic features and the occurrence and character of the Silurian, Devonian, and Pleistocene formations, and the occurrence of building stones.

125 —— [Contribution to "A symposium of the classification and nomenclature of geologic time divisions"].  
 Jour. of Geol., vol. vi, pp. 352-355, 1898.

126 **Calvin** (Samuel). The interglacial deposits of northeastern Iowa. Iowa Acad. Sci., Proc., vol. v, pp. 64-70; Abstract, Am. Geol., vol. xxi, pp. 251-254, 1898.

Reviews the literature on the subject and describes the character and occurrence of the Buchanan gravels.

127 **Campbell** (Marius R.). Tazewell folio, Virginia-West Virginia. U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 44, 1898.

Describes the physiography of the Appalachian province and of the Tazewell quadrangle, the geologic structure of the region, the occurrence and character of Cambrian, Ordovician, Silurian, Devonian, and Carboniferous rocks, and the occurrence and chemical character of the coal. Includes topographic and geologic maps and columnar section.

128 — **Richmond** folio, Kentucky.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio No. 46, 1898.

Describes the physiographic features of the Ohio basin and Richmond quadrangle, the geologic history and structure, and the character and occurrence of Silurian, Devonian, Carboniferous, and Tertiary formations. Includes topographic and geologic maps and structure sections.

129 — **London** folio, Kentucky.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 47, 1898.

Describes the physiographic features, geologic history, character and occurrence of the Siluro-Devonian, Devonian, and Carboniferous rocks, the structural relations and the occurrence of coal. Accompanied by topographic and geologic maps and columnar sections.

130 — **Earthquake shocks in Giles County, Virginia.**

Science, new ser., vol. vii, pp. 233-235, with sketch map, 1898.

Describes the results of investigations of the earthquake shocks in May, 1897.

131 **Canby** (H. S.). See Parker (E. W.) No. 599.

132 **Carlyle** (William A.). [Mining operations for gold, coal, etc., in the Province of British Columbia.]

Brit. Col., Ann. Rep. of the Minister of Mines for 1897, pp. 453-640, 16 pls., 1898.

Includes account of the mining operations and quotations from descriptions of the geologic features previously published by members of the Canadian Geological Survey.

133 **Case** (E. C.). The development and geological relations of the vertebrates. Part I. The fishes.

Jour. of Geol., vol. vi, pp. 393-416, 3 figs., 1898.

Describes the classification and general changes in the anatomy of fishes resulting in the modern type, and a brief summary of the characters of different forms.

134 — The development and geological relations of the vertebrates. II. Amphibia.

Jour. of Geol., vol. vi, pp. 500-523, 5 figs., 1898.

Discusses the origin and structure of the *Amphibia* and describes the general characters of various groups.

135 **Case** (E. C.). The development and geological relations of the vertebrates III. Reptilia.  
 Jour. of Geol., vol. vi, pp. 517-523, 622-646, 711-735, 1898.  
 Describes the general characters of the various forms.

136 — The development and geological relations of the vertebrates.  
 IV. Aves. V. Mammalia.  
 Jour. of Geol., vol. vi, pp. 816-839, 1898.

137 — Toxochelys.  
 Kan. Univ. Geol. Surv., vol. iv, pp. 370-385, pls. lxxix-lxxxiv, 1898.  
 Describes several species, including a new one.

138 — The significance of certain changes in the temporal region of the primitive Reptilia.  
 Am. Nat., vol. xxxii, pp. 69-74, 2 figs., 1898.

139 **Catlett** (Charles). See Birkinbine (John), No. 79.

140 **Chalmers** (Robert). The preglacial decay of rocks in eastern Canada.  
 Brit. Assoc. Adv. Sci., Rept. 1897, pp. 655-656, 1898.  
 Describes beds of decayed rock beneath the glacial covering.

141 — The preglacial decay of rocks in eastern Canada.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 273-282, 1898.  
 Describes the physiographic features of the region, the distribution of the decayed rock materials, and the causes of the decomposition of the rocks.

142 — The gold-bearing deposits of the eastern townships of Quebec.  
 Federated Can. Mg. Inst., Jour., vol. ii, pp. 13-27, 1897.  
 Describes the occurrence and origin of the gold deposits of the region.

143 **Chamberlin** (T. C.). [Review of "Revised text-book of geology," by James D. Dana. Edited by William North Rice.]  
 Jour. of Geol., vol. vi, pp. 435-436, 1898.

144 — [Review of "Northward over the great ice. A narrative of life and work along the shores and upon the interior ice cap of northern Greenland in the years 1886 and 1891-1897," by Robert E. Peary.]  
 Jour. of Geol., vol. vi, pp. 438-441, 1898.

145 — The ulterior basis of time divisions, and the classification of geologic history.  
 Jour. of Geol., vol. vi, pp. 449-462, 3 figs., 1898.  
 Discusses the evidences that the history of the earth can be classified into natural divisions by the recognition of its inherent periods.

146 — A systematic source of evolution of provincial faunas.  
 Jour. of Geol., vol. vi, pp. 597-608, 1898.  
 Discusses the characteristics of the movements of the earth crust and the relation and influence of the attitude of sea to land in the evolution of faunas.

**147 Chamberlin (T. C.).** The influence of great epochs of limestone formation upon the constitution of the atmosphere.  
 Jour. of Geol., vol. vi, pp. 609-621, 1898.  
 Discusses the relation of carbon dioxide to geologic processes, and the changes that are effected in the atmosphere through the building up of great limestone formations.

**148 — A group of hypotheses bearing on climatic changes.**  
 Brit. Assoc. Adv. Sci. Rept., 1897, pp. 644-647, 1898; Jour. of Geol., vol. v, pp. 653-683, 1897.  
 Discusses the indications of glaciations during geologic time, and the theories as to the origin and development of the earth and of the atmosphere.

**149 — A supplementary hypothesis respecting the origin of the loess of the Mississippi Valley.**  
 Abstract, Am. Assoc. Adv. Sci., Proc. vol. xlvi, pp. 204-205, 1898.  
 See Bibliography and Index for 1897, No. 120.

**150 Chester (Albert H.).** On krennerite from Cripple Creek, Colorado.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 375-377, 1 fig., 1898.  
 Describes its chemical and crystallographic character.

**151 Chittenden (A. Percival).** Mountain structures of Pennsylvania.  
 Am. Geog. Soc., Bull., vol. xxix, pp. 175-180, 6 figs., 1897.  
 Review by W. M. Davis, Science, new ser., vol. vii, p. 203 (‡ p.), 1898.  
 Discusses the origin of the mountain structures.

**152 Clark (William Bullock).** With the collaboration of R. M. Bagg and George B. Shattuck. Report upon the Upper Cretaceous formations [New Jersey].  
 N. J. Geol. Surv., Ann. Rept. for 1897, pp. 161-210, 1898.  
 Reviews the literature on the formation, describes the topographic features and the character and occurrence of the subdivisions of the Upper Cretaceous, and discusses their correlation.

**153 — [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]**  
 Jour. of Geol., vol. vi, pp. 340-342, 1898.

**154 Clarke (John M.).** The geological conditions at the site of the proposed dam and storage reservoir of the Genesee River at Portage [New York].  
 N. Y. State engineer and surveyor, Ann. Rept., 1896, pp. 730-746, 1897.  
 Describes the character and occurrence of the Portage group, the topographic features of the region, and the erosion of the Portage group.

**155 — The stratigraphic and faunal relations of the Oneonta sandstone and shales, the Ithaca and Portage groups in central New York.**  
 N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 11-12, 31-81, pls. i-vii, 9 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 31-81, pls. i-vii, 9 figs., 1898.  
 Gives a historical sketch of these groups, a discussion of their stratigraphic and faunal relations, and two geologic maps.

156 **Clarke** (John M.). Notes on some crustaceans from the Chemung group of New York.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 729-738, figs. 1-4, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 729-738, figs. 1-4, 1898.

Describes *Pephricaris horripilata* n. sp., and *Bronteus senescens* Clarke.

157 **Claypole** (E. W.). Microscopical light in geological darkness.

Am. Geol., vol. xxii, pp. 217-228, 1898.

Describes the use of the microscope in the study of geologic phenomena.

158 —— Glacial theories, cosmical and terrestrial.

Am. Geol., vol. xxii, pp. 310-315, 1898.

Discusses various hypotheses.

159 **Clements** (J. Morgan). A study of some examples of rock variation.

Jour. of Geol., vol. vii, pp. 372-392, 1898; Review, Am. Geol., vol. xxii, p. 381 (1 p.); Am. Nat., vol. xxxii, pp. 966-967, 1898.

Describes the microscopic and chemical characters of diorite, gabbros, and peridotites of Crystal Falls, Michigan, and discusses the relations of the rocks of the series.

160 **Clendenin** (W. W.). Clays of Louisiana.

Eng. and Mg. Jour., vol. lxvi, pp. 456-457, 1898.

Describes the occurrence and character of the clays of the State.

161 **Coleman** (Arthur P.). Clastic Huronian rocks of western Ontario.

Geol. Soc. Am., Bull., vol. ix, pp. 223-238, 1 fig., 1898; Abstracts Jour. of Geol., vol. vi, pp. 212-214; Science, new ser., vol. vii, p. 81 (1 p.), 1898.

Discusses the classification of the series and describes the Huronian clastics, the relations of the Laurentian and Huronian, and the geologic history of the region.

162 —— Glacial and interglacial deposits at Toronto [Canada.]

Brit. Assoc. Adv. Sci., Rept., 1897, pp. 650-651, 1898.

Describes glacial phenomena of the vicinity.

163 —— Notes on the western Ontario gold fields.

Federated Can. Mg. Inst., Jour., vol. ii, pp. 278-282, 1898.

Describes the occurrence and character of the gold-bearing deposits.

164 **Cooper** (A. S.). A bituminous rock deposit in Santa Barbara County, California.

Eng. and Mg. Jour., vol. lxvi, pp. 278-279, 4 figs., 1898.

Describes the geology of the region and the occurrence of the bituminous rock.

165 —— Southern California petroleum.

Mg. and Sci. Press, vol. lxxvii, p. 372, 2 figs., 1898.

Describes occurrence of petroleum in Santa Barbara County, California.

166 **Cowles** (Henry C.). [Review of "Fossil Plants for Students of Botany and Geology, vol. i," by A. C. Seward.]  
Jour. of Geol., vol. vi, pp. 436-438; Bot. Gaz., vol. xxvi, pp. 59-61, 1898.

167 **Crane** (W. R.). Geography and detailed stratigraphy of the Kansas Coal Measures; description of mines, mining methods, and mining machinery; chemical and physical properties of Kansas coals; output and commerce; mining directory, and mining laws.  
Kan. Univ. Geol. Surv., vol. iii, pp. 108-336, pls. xxxi-lxx, figs. 4-54, 1898.

168 **Crawford** (J.). Recent severe seismic disturbances in Nicaragua.  
Am. Geol., vol. xxii, pp. 56-58, 1898.  
Describes earthquake shocks.

169 **Crosby** (W. O.). Geology: South shore [vicinity of Boston, Mass.].  
Am. Soc. Adv. Sci., fiftieth anniversary meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 21-31, 3 figs. Salem, Mass., 1898.  
Describes the geologic features of the region and gives a list of papers on its geology.

170 — History of the Blue Hills complex [Massachusetts].  
Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 304-305; Am. Geol., vol. xxii, pp. 263-264, 1898.  
Describes the igneous and sedimentary rocks of the region.

171 — [Review of various geologic papers.]  
Am. Geol., vol. xxii, pp. 377-383, 1898.

172 **Cross** (Whitman). The geological versus the petrographical classification of igneous rocks.  
Jour. of Geol., vol. vi, pp. 79-91; Abstracts, Science, new ser., vol. vii, p. 83 (½ p.); Am. Nat., vol. xxxii, pp. 465-466, 1898.  
Refers to the many broad classifications of rock masses necessary from a geologic standpoint, and concludes that most geologic criteria are not available for the construction of a systematic classification of rocks as objects—the petrographic scheme.

173 — Geology of the Cripple Creek gold mining district [Colorado].  
Colo. Sci. Soc., Proc., vol. v, pp. 24-49, 1898.  
See Bibliography and Index for 1896, No. 150.

174 — The San Miguel formation.  
Colo. Sci. Soc., Proc., vol. v, pp. 235-241, 1898.  
See Bibliography and Index for 1896, No. 152.

175 — See **Day** (W. C.), No. 227.

176 — See **Diller** (J. S.), No. 234.

177 **Crump** (H. M.). The clays and building stones of Kentucky.  
Eng. and Mg. Jour., vol. lxvi, pp. 190-191, 1898.  
Includes notes on their character and occurrence.

178 **Culbertson** (Glenn). Preliminary work for the approximate determination of the time since the retreat of the first great ice sheet.

Ind. Acad. Sci., Proc. 1897, pp. 242-243, 1898.

Describes methods of work employed in Jefferson County, Indiana, for determining the time interval.

179 **Cumings** (Edgar R.), **Prosser** (Charles S.), and. Sections and thickness of the Lower Silurian formations on West Canada Creek and in the Mohawk Valley [New York].

See Prosser (C. S.), and Cumings (E. R.), No. 643.

180 **Cummins** (W. F.). Texas Permian.

Texas Acad. Sci., Trans., vol. ii, pp. 93-98, 1897.

Discusses the character and relations of the Texas Permian subdivisions, and describes recent observations on the Wichita division.

181 **Cushing** (H. P.). Syenite-porphyry dikes in the northern Adirondacks [New York].

Geol. Soc. Am., Bull., vol. ix, pp. 239-256, pl. 17, 1 fig.; Abstracts, Jour. of Geol., vol. vi, pp. 119-120; Am. Geol., vol. xxii, p. 382 ( $\frac{1}{2}$  p.); Am. Nat., vol. xxxii, pp. 534-535 ( $\frac{1}{2}$  p.); Science, new ser., vol. vii, pp. 80-81 ( $\frac{1}{2}$  p.), 1898.

Describes the occurrence and distribution of the dikes and the mineralogic and chemical composition of the dike rocks.

182 — Report on the geology of Clinton County [New York].

N. Y. 15th Ann. Rept. State Geologist, vol. i, pp. 21-22, 499-573, pls. i-iv, 13 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 499-573, pls. i-iv, 13 figs., 1898.

Describes the physiography, the general geologic relations, the character of the igneous rocks, and of the Cambrian, Silurian, and Pleistocene deposits, and the metamorphism of the pre-Cambrian rocks. Includes details of township geology.

## D.

183 **Dall** (William Healey). Contributions to the Tertiary fauna of Florida, with especial reference to the Miocene silex beds of Tampa and the Pliocene beds of the Caloosahatchie River.

Wagner Free Inst. Sci., Trans., vol. iii, Pt. III, pp. 483-570, 1895.

Includes descriptions of the families of the orders Prionodesmacea, Anomalodesmacea, Teleodesmacea, and Paleoconcha, and notes on nomenclature.

184 — Contributions to the Tertiary fauna of Florida, with especial reference to the silex beds of Tampa and the Pliocene beds of the Caloosahatchie River, including in many cases a complete revision of the generic groups treated of and their American Tertiary species.

Wagner Free Inst. Sci., Trans., vol. iii, Pt. IV, pp. 571-916, pls. xxiii-xxv, 1898.

185 **Dall** (William Healey). Notes on the paleontological publications of Professor William Wagner.  
 Wagner Free Inst. Sci. Trans., vol. v, pp. 7-11, pls. i-iii, 1898.  
 Includes notes on species described by Professor Wagner and illustrations of a number of species.

186 — [Paleontology of the collections from Isthmus of Panama and Costa Rica].  
 Harvard Coll. Mus. Comp. Zool., Bull., vol. xxviii, No. 5, pp. 271-275, 1898.  
 Gives the author's conclusions regarding the different horizons from a study of materials collected by R. T. Hill.

187 — A table of the North American Tertiary horizons correlated with one another, and with those of western Europe, with annotations.  
 U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 327-348, 1898.  
 Defines the main divisions of the Tertiary and includes note on the table.

188 — Synopsis of the recent and Tertiary Psammobiidæ of North America.  
 Phil. Acad. Nat. Sci., Proc. 1898, pp. 57-62, 1898.  
 Gives a list of the genera and species.

189 — A new subgenus of Coralliophaga.  
 The Nautilus, vol. xi, p. 135, 1898.  
 Describes material from the Tertiary of Alabama.

190 — See **Leidy** (Joseph) No. 481.

191 **Dana** (E. S.). A text-book of mineralogy with an extended treatise on crystallography and physical mineralogy.  
 John Wiley and Sons, New York, 1898.  
 Review of J. P. Iddings, Jour. of Geol., vol. vi, pp. 756-757, 1898.

192 **Darton** (Nelson Horatio). A preliminary description of the faulted region of Herkimer, Fulton, Montgomery, and Saratoga counties [New York].  
 N. Y., 14th Ann. Rept. State Geologist, pp. 33-53, pls. 1-9, 12 figs., 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 33-53, pls. 1-9, 12 figs., 1897; Review by Stuart Weller, Jour. of Geol., vol. vi, p. 205 (½ p.), 1898.  
 Describes the faults of the region and the occurrence of the crystalline, Cambrian, and Ordovician rocks.

193 — Preliminary geological map of Albany County [New York].  
 N. Y., 15th Ann. Rept. State Geologist, vol. i, 1897.

194 — Underground waters of a portion of southeastern Nebraska.  
 U. S. Geol. Surv., Water Supply and Irrigation Papers, No. 12, 53 pp., pls. i-xxi, figs. 1-14, 1898.  
 Describes the occurrence and character of the Carboniferous, Cretaceous, Tertiary, Pleistocene and Recent formations of the region, and the artesian wells and water supply.

195 **Darton** (Nelson Horatio). Discovery of marine Cretaceous in boring at Norfolk, Virginia.  
 Abstract, Geol. Soc. Am., Bull., vol. ix, pp. 414-416; Science, new ser., vol. vii, p. 52 (81.), 1898.  
 Describes the materials from the borings and gives a list of the fossils.

196 — Geothermal data from deep artesian wells in the Dakotas.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 161-168, 2 figs., 1898. Abstract, Science, new ser., vol. vii, p. 84 (1 p.), 1898.  
 Presents data regarding the temperature of underground waters.

197 — Tertiary of South Dakota and Nebraska.  
 Abstract, Science, new ser., vol. vii, p. 359 (1 p.), 1898.  
 Summary of paper read before the Geological Society of Washington.

198 — and **Keith** (Arthur). On dikes of felsophyre and basalt in Paleozoic rocks in central Appalachian Virginia.  
 Am. Jour. Sci., 4th ser., vol. vi, pp. 305-315, 1 fig., 1898.  
 Describes the occurrence and character of the dikes and includes petrographic notes on the dike rocks.

199 **Davis** (William M.). The Triassic formation of Connecticut.  
 U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 9-192, pls. i-xx, figs. 1-52, 1898.  
 Describes the deposition, character, and occurrence of the Triassic strata, the occurrence and character of the igneous rocks, and the deformation and denudation of the region.

200 — Physiography [portions of New England].  
 Am. Assoc. Adv. Sci., Anniversary Meeting, Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 1-7, 9 figs., Salem, Mass., 1898.  
 Describes the physiographic features of the uplands of southern New England, the coastal plain of Maine, and the Meriden district of the Connecticut Valley. Gives a list of papers on the physiography of the region.

201 — [Review of "Topographic atlas of the United States—physiographic types," by Henry Gannett.]  
 Jour. of Geol., vol. vi, pp. 431-433, 1898. Science, new ser., vol. vii, p. 766, 1898.

202 — [Review of "Geology of the St. Croix Dalles," by C. P. Berkey.]  
 Science, new ser., vol. vii, p. 57 (1 p.), 1898.

203 — The grading of mountain slopes.  
 Abstract, Science, new ser., vol. vii, p. 81 (1 p.), 1898.

204 — [Review of "The physical geography of New York," by R. S. Tarr.]  
 Science, new ser., vol. vii, pp. 124-125, 1898.

205 — [Review of "The topography of Mexico," by H. M. Wilson.]  
 Science, new ser., vol. vii, p. 125 (1 p.), 1898.

206 Davis (William M.). [Review of "Some pre-Glacial drainage features of southern Ohio," by W. G. Tight.]  
Science, new ser., vol. vii, p. 203 (½ p.), 1898.

207 — [Review of "Great changes of level in Mexico and the inter-oceanic connections," by J. W. Spencer.]  
Science, new ser., vol. vii, p. 203 (½ p.), 1898.

208 — [Review of "Mountain structures of Pennsylvania," by A. P. Chittenden.]  
Science, new ser., vol. vii, p. 203 (½ p.), 1898.

209 — [Review of "Cote sans Dessein and Grand Tower," by C. F. Marbut.]  
Science, new ser., vol. vii, p. 273 (½ p.), 1898.

210 — [Review of "Artesian well prospects in the Atlantic coastal plain region," by N. H. Darton.]  
Science, new ser., vol. vii, pp. 273-274 (½ p.), 1898.

211 — [Review of "Waterfall lakes in central New York," by E. C. Quereau.]  
Science, new ser., vol. vii, pp. 489-490, 1898.

212 — [Review of "A geological reconnaissance of the coal fields of the Indian Territory," by N. F. Drake.]  
Science, new ser., vol. vii, p. 561 (½ p.), 1898.

213 — [Review of "Submerged valleys of the coast of California, U. S. A.," by George Davidson.]  
Science, new ser., vol. vii, p. 562, 1898.

214 — [Review of "Water resources of Indiana and Ohio," by Frank Leverett.]  
Science, new ser., vol. vii, pp. 562-563, 1898.

215 — [Review of "Origin of the gorge of the Whirlpool Rapids at Niagara," by F. B. Taylor.]  
Science, new ser., vol. vii, p. 627 (½ p.), 1898.

216 — [Review of "Drift phenomena of Puget Sound," by Bailey Willis.]  
Science, new ser., vol. vii, pp. 704-705 (½ p.), 1898.

217 — [Review of "The physical geography of New Jersey," by R. D. Salisbury.]  
Science, new ser., vol. vii, pp. 765-766 (½ p.), 1898.

218 — [Review of "Geology of Yukon gold district, Alaska," by J. E. Spurr and H. B. Goodrich.]  
Science, new ser., vol. vii, p. 850 (½ p.), 1898.

219 — [Review of "The physical geography of Worcester, Massachusetts," by J. H. Perry.]  
Science, new ser., vol. vii, pp. 850-851 (½ p.), 1898.

220 **Davis** (William M.). [Review of "Late formations and great changes of level in Jamaica," by J. W. Spencer.]  
Science, new ser., vol. vii, p. 851 (1 p.), 1898.

221 — [Geology and its relations to topography.]  
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 86-88, 1898.  
In discussion of paper by John C. Branner on the same subject.

222 **Dawson** (George M.). Summary report of the Geological Survey department for the year 1896 [Canada].  
Canada Geol. Surv., new ser., vol. ix, Rept. A, 144 pp., 1898.  
Gives a summary of the office and field work of the survey.

223 **Dawson** (J. William). On the genus *Lepidophloios* as illustrated by specimens from the coal formation of Nova Scotia and New Brunswick.  
Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv, pp. 57-78, pls. i-xiv, figs. A-D, 1898.  
Describes *L. acadianus* and *L. cliftonensis* and discusses the relations with other species and the relations of *Lepidophloios* to certain other genera.

224 — Note on *Lepidophloios cliftonensis*.  
Geol. Soc. Am., Bull., vol. ix, p. 416 (101), 1898; Abstract, Science, new ser., vol. vii, pp. 79-80 (1 p.), 1898.

225 **Dawson** (William L.). Glacial phenomena in Okanogan County. Washington.  
Am. Geol., vol. xxii, pp. 203-217, 4 figs., 1898.  
Describes the physiography and development of the glacial drainage of the region and the occurrence of terraces and other glacial phenomena.

226 **Day** (David T.). Platinum.  
U. S. Geol. Surv., 19th Ann. Rept., Pt. VI, pp. 265-271, 1898.  
Includes statistics of production and notes on occurrence in California and British Columbia.

227 **Day** (William C.). Stone.  
U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 205-315, 1898.  
Includes statistics of production, petrographic notes on granite from Barre, Vermont, by Whitman Cross; notes on character and occurrence of New England granites on California marbles, by E. W. Hilgard and George Madeira, and on West Virginia marbles by George C. Underwood; on the Bangor roofing slates of Pennsylvania, by Mansfield Merriman, and on sandstones from Niles, California, by E. W. Hilgard; a description of the Bedford oolitic limestone of Indiana, by C. E. Sieben-thal, and chemical analyses of various building stones.

228 **Dean** (Bashford). Note on the ventral armoring of *Dinichthys*.  
N. Y. Acad. Sci., Trans., vol. xvi, pp. 57-61, 1898.

229 — On a new species of *Edestus*, *E. lecontei*, from Nevada.  
N. Y. Acad. Sci., Trans., vol. xvi, pp. 61-69, 1898.  
Describes a new species and discusses its evidence of the primitive mode of spine formation within the phylum of fishes.

230 — See **Newberry** (J. S.), No. 573.

231 **De Kalb** (Courtenay). The onyx marbles.

Stone, vol. xvii, pp. 397-405, 1898.

Describes the occurrence of onyx marbles.

232 — See **Parker** (E. W.), No. 598.

233 **Derby** (Orville A.). On the origin of certain siliceous rocks.

Jour. of Geol., vol. vi, 366-368, 1898.

Discusses the origin of the Arkansas novaculite.

234 **Diller** (Joseph Silas). The educational series of rock specimens collected and distributed by the United States Geological Survey.

U. S. Geol. Surv., Bull. No. 150, 400 pp., pls. i-xlvii, figs. 1-18, 1898.

Describes the structural and physical features of rocks, the principal rock-making minerals, and the classification of rocks, with descriptions and chemical analyses of the educational series of rocks distributed by the U.S. Geological Survey.

235 — Roseburg folio, Oregon.

U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 49, 1898.

Describes the topography, the occurrence of the Juratrias (?), Cretaceous, Tertiary, and igneous rocks, and the occurrence of gold, coal, cement, and building stone. Discusses the origin of the topography. Includes topographic and geologic maps.

236 **D'Invilliers** (E. V.).

Franklin Inst., Jour., vol. cxlvi, pp. 41-42, 1898.

[In discussion of paper by R. Cabrera on "Mineral resources of Cuba."]

237 **Douglas** (James). The copper industry of Arizona.

The Mineral Industry 1897, pp. 227-232, 1898.

Describes the occurrence of copper in the mines of Arizona.

238 **Douville** (M. H.). Sur les couches à rudistes du Texas.

Soc. Géol. de France, Bull., vol. xxvi, pp. 387-388, 1898.

Discusses the paleontologic evidence of the age of certain subdivisions of the Cretaceous of Texas.

239 **Drake** (Noah Fields). A geological reconnaissance of the coal fields of the Indian Territory.

Am. Phil. Soc., Proc., vol. xxxvi, pp. 226-419, pls. i-ix, 6 figs., 1897. Leland Stanford Univ., Pub., Cont. to Biology, xiv, pp. 226-419, pls. i-ix, 6 figs., 1898; Review by C. R. Keyes, Jour. of Geol., vol. vi, pp. 652-658, 1898.

Describes the character, occurrence, distribution, and classification of the Coal Measures and the occurrence and character of the coals, and gives lists of fossils collected and description of three new species.

240 **Drygalski** (Erich von). Grönlands Eis und sein Vorland.

Grönland-expedition der Gesellschaft für Erdkunde zu Berlin, Erster band, 556 pp., 44 pls., 54 figs. and 9 maps, 1897.

Describes the physiographic features and glacial phenomena of portions of Greenland.

241 **Dumble** (E. T.). Some Texas oil horizons.

Texas Acad. Sci., Trans., vol. ii, pp. 87-92, 1897.

Describes occurrence in Carboniferous and Cretaceous strata.

242 **Dunn** (Russell L.). The country of the Klondike [Alaska].

Mg. and Sci. Press, vol. lxxvii, pp. 400, 425-426 and 449, 1898.

Describes the glacial features of the region and the occurrence of the gold-bearing rocks and placers.

## E.

243 **Eakle** (Arthur S.). Erionite, a new zeolite.

Am. Jour. Sci., 4th ser., vol. vi, pp. 66-68; Review, Am. Geol., vol. xxii, p. 378 (1 p.), 1898.

Describes the occurrence and chemical character of the material found in a rhyolite tuff from Oregon.

244 — A biotite-tinguaite dike from Manchester by the Sea, Essex County, Massachusetts.

Am. Jour. Sci., 4th ser., vol. vi, pp. 489-492, 1898.

Describes the occurrence of the dike and the microscopic and chemical characters of the dike rocks.

245 **Earle** (Charles). Relationship of the Chriacidæ to the primates.

Am. Nat., vol. xxxii, pp. 261-262, 1898.

246 **Eastman** (C. R.). Dentition of Devonian Ptyctodontidæ.

Am. Nat., vol. xxxii, pp. 473-488, 545-560, 50 figs., 1898.

Describes material from the State quarry beds of Iowa and discusses the relations of the Devonian fish fauna of Milwaukee, Wisconsin.

247 — Some new points in Dinichthyid osteology.

Am. Nat., vol. xxxii, pp. 747-768, 6 figs., 1898.

248 — On the occurrence of fossil fishes in the Devonian of Iowa.

Iowa Geol. Surv., vol. vii, pp. 108-116, pl. iv, fig. 10, 1897; Review by C. R. Keyes, Am. Geol., vol. xxii, pp. 237-238, 1898.

Discusses the differences in the Devonian and Carboniferous fish faunas.

249 **Eaton** (G. F.). The prehistoric fauna of Block Island, as indicated by its ancient shell heaps.

Am. Jour. Sci., 4th ser., vol. vi, pp. 137-159, 1898.

Describes the general geologic and geographic features of the island and the occurrence and distribution of the shell heaps. Gives lists of the species found in them.

250 **Elftman** (A. H.). The geology of the Keweenawan area in north-eastern Minnesota.

Am. Geol., vol. xxi, pp. 90-109, with map, 175-188, vol. xxii, pp. 131-149, pl. vii, 1898.

Describes the glacial geology of the region and gives a historical review and description of the stratigraphy of the Keweenawan series and an account of the gabbro group.

251 **Elftman** (A. H.). The St. Croix River Valley [Minnesota-Wisconsin].

Am. Geol., vol. xxii, pp. 58-61, 1898.

Describes the relation of the preglacial and postglacial courses of the river.

252 **Ellis** (W. Hodgson) and **Lawson** (William). Chemical notes on the so-called Sudbury coal [Ontario].

Can. Inst., Proc., new ser., vol. i, pp. 67-68, 1897.

Gives chemical analyses of the coals.

253 **Ells** (R. W.). Notes on the Archean of eastern Canada.

Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv, pp. 117-124, 1898.

Describes the occurrence and general character of the Laurentian and Huronian rocks.

254 —— Sands and clays of the Ottawa Basin [Canada].

Geol. Soc. Am., Bull., vol. ix, pp. 211-222, pl. 16; Abstracts, Jour. of Geol., vol. vi, pp. 117-118; Science, new ser., vol. vii, pp. 49-50 (§ p.), 1898.

Describes the physiography of the region, the character and distribution of the sands and clays and other glacial phenomena.

255 —— Problems in Quebec geology.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 640-642, 1898; Abstract, Ottawa Nat., vol. xi, pp. 173-176, 1897.

Describes the general results of the study of the geology of the Province.

256 —— Formations, faults, and folds of the Ottawa district [Canada].

Ottawa Nat., vol. xi, pp. 177-189, 1898.

Describes the occurrence, character, and structure of the Ordovician strata of the vicinity.

257 **Emerson** (B. K.). Geology: Turner Falls region. Two excursions in the Connecticut Valley [Massachusetts].

Am. Assoc. Adv. Sci., fiftieth anniversary meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 33-35, Salem, Massachusetts, 1898.

Describes the geologic features of the region.

258 —— Holyoke folio, Massachusetts-Connecticut.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 50, 1898.

Describes the topography, the character, and occurrence of the rocks of the Algonkian, Cambrian, Silurian, Devonian, Carboniferous, Jura-Trias, and Pleistocene periods of western Massachusetts and of the Holyoke quadrangle. Describes the post-Glacial deposits and the occurrence of building stones and clay. Includes topographic and geologic maps of the Holyoke quadrangle.

259 **Emmons** (Samuel Franklin). Tenmile district special folio, Colorado.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 48, 1898.

Describes the geographic features, occurrence and character of the Archean, Cambrian, Silurian, and Carboniferous strata, recent deposits, diorite-porphyrines and rhyolites of the region. Discusses the structural relations and orographic disturbances and describes the geographic and geologic distribution, character, and occurrence of the silver-ore bodies. Accompanied by topographic and geologic maps and structure sections.

260 — Map of Alaska, showing known gold-bearing rocks, with descriptive text containing sketches of the geography, geology, and gold deposits and routes to the gold fields.

U. S. Geol. Surv. (prepared in accordance with public resolution No. 3 of the Fifty-fifth Congress, second session, approved January 20, 1898), 44 pp. and geologic map, Washington, 1898.

Review Zeit. für prak. Geol., Heft 8, pp. 292-297; Abstracts, Nat. Geog. Mag., vol. ix, pp. 139-172, 3 pls.; Mg. and Sci. Press, vol. lxxvi. pp. 314-315, 341-342, 370, and 393, 1898.

260a — [Geology of the Aspen mining district, Colorado, Introduction.]

U. S. Geol. Surv., Mon. XXXI, pp. xvii-xxxii, 1898.

Includes an account of the development of the Aspen mining district and the geologic investigations that have been made in the region.

261 **Evans** (Nevil N.). Chemical composition of the granite from Pine Lake, Ontario.

Abstract, Science, new ser., vol. viii, p. 82 ( $\frac{1}{3}$  p.), 1898.

## F.

262 **Fairbanks** (Harold W.). Geology of a portion of the southern coast ranges.

Jour. of Geol., vol. vi, pp. 551-576, 2 figs., 1898.

Describes the topographic features, the character and occurrence of the Jurassic, Cretaceous, Tertiary, and Pleistocene deposits and of the igneous rocks. Discusses the structure and geologic history of the region.

263 — The great Sierra Nevada fault scarp.

Pop. Sci. Mo., vol. lii, pp. 609-621, 7 figs., 1898.

Discusses the history of the fault scarp along the eastern base of the Sierra Nevada range.

264 — Bituminous rock deposits in the vicinity of San Luis Obispo, California.

Mg. and Sci. Press, vol. lxxvi, p. 661, 1 fig., 1898.

Describes the occurrence of the bituminous rock and discusses its origin.

265 **Fairchild** (Herman Le Roy). Kettles in glacial lake deltas.

Jour. of Geol., vol. vi, pp. 589-596, 3 figs., 1898.

Describes occurrence at Potter, New York, and discusses its origin and formation.

266 **Fairchild** (Herman Le Roy). Glacial geology of western New York.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 664 (½ p.), 1898; Geol. Mag. Dec. iv, vol. iv, pp. 529-537, with map, 1897.

Describes the glacial deposits and phenomena of the State.

267 — Glacial geology in America.

Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 257-290; Sci. Am. Suppl., vol. xlvi, pp. 18972-18974, 18989-18990, 19001-19002; Am. Geol., vol. xxii, pp. 154-189, 1898.

Reviews the early literature on the glaciation of North America and the literature on the cause, time divisions, character, and origin of the various glacial phenomena.

268 — Basins in glacial lake deltas.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 291 (½ p.); Science, new ser., vol. viii, p. 467 (½ p.); Am. Geol., vol. xxii, p. 254 (½ p.), 1898.

Describes occurrence near Potter, N. Y., and discusses its origin.

269 — Glacial waters in the Finger Lake region of New York.

Abstracts: Science, new ser., vol. viii, p. 463 (½ p.); Am. Geol., vol. xxii, p. 249 (9 l.), 1898.

270 **Farrington** (Oliver C.). Datolite from Guanajuato [Mexico].

Am. Jour. Sci., 4th ser., vol. v, pp. 285-288, 5 figs., 1898.

Describes the crystallographic characters of the material.

271 **Ferrier** (W. F.), **Barlow** (A. E.) and. On the relations and structure of certain granites and associated arkoses of Lake Temiscaming, Canada.

See Barlow (A. E.) and Ferrier (W. F.), No. 50.

272 **Fitzpatrick** (T. J.). The drift section and the glacial striae in the vicinity of Lamoni, Iowa.

Iowa Acad. Sci., Proc., vol. v, pp. 105-106, pl. viii, 1898.

Describes occurrence of beds of driftwood and buried forest, and discusses its bearing on the question of the existence of a pre-Kansas stage.

273 **Foerste** (August F.). A report on the Niagara limestone quarries of Decatur, Franklin, and Fayette counties, with remarks on the geology of the Middle and Upper Silurian rocks of these and neighboring (Ripley, Jennings, Bartholomew, and Shelby) counties [Indiana].

Ind. Dept. of Geol. and Nat. Res., 22d. Ann. Rept., pp. 195-255, pls. xiv-xviii, 1898; Abstract, Stone, vol. xvii, pp. 253-256, 1898.

Gives a general description of the Silurian strata and local details of the quarries.

274 **Foote** (H. W.), **Penfield** (S. L.) and. On clinohedrite, a new mineral from Franklin, N. J.

See Penfield (S. L.) and Foote (H. W.), No. 619.

**275 Foote** (Warren M.). Note on the occurrence of native lead with roeblingite, native copper, and other minerals at Franklin Furnace, New Jersey.

Am. Jour. Sci., 4th ser., vol. vi, pp. 187-188, 1898.  
Describes the characters of the material.

**276 Fowke** (Gerard). Preglacial drainage in the vicinity of Cincinnati; its relation to the origin of the modern Ohio River, and its bearing upon the question of the southern limits of the ice sheet.

Dennison Univ., Sci. Lab., Bull., vol. xi, Art. I, pp. 1-10, pl. i, 1898.  
Describes the origin and geologic history of the Ohio River and the southern limit of the ice sheet.

**277 Frazer** (Persifor). Notes on the northern Black Hills of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 204-231, 1898.  
Describes the general geology of the region and the occurrence of the gold ores. Includes a bibliography.

**278** —— Archean character of the nuclei of the Antilles.

Am. Geol., vol. xxi, pp. 250-251 (½ p.), 1898.

**279 Frenzel** (A. B.). The turquoise deposit in Mohave County, Arizona.

Eng. and Mg. Jour., vol. lxvi, p. 697, 1 fig., 1898.  
Describes the occurrence and chemical character of the material.

**280 Fuller** (Myron L.). Notes on a Carboniferous boulder train in eastern Massachusetts.

Boston Soc. Nat. Hist., Proc., vol. xxviii, pp. 251-263, with map, 1898.  
Describes the character and distribution of the material and gives a bibliography of the subject.

**281** —— Champlain submergence in the Narragansett Bay region [Rhode Island].

Am. Geol., vol. xxi, pp. 310-321, 1898.  
Discusses theories as to the origin of certain glacial phenomena of the region.

**282** —— Crushed quartz and its source.

Stone, vol. xviii, pp. 1-4, 1 fig., 1898.  
Describes the material from which the crushed quartz used in polishing, manufacture of glass, etc., is obtained.

## G.

**283 Gannett** (Henry). Physiographic types.

U. S. Geol. Surv., Topographic atlas of U. S., folio 1, 1898; Reviews by W. M. Davis, Jour. of Geol., vol. vi, pp. 431-433; Science, new ser., vol. vii, p. 766, 1898.

Describes various physiographic types in the United States, illustrated by topographic maps.

284 **Gannett** (Henry). A gazetteer of Kansas.  
U. S. Geol. Surv., Bull. No. 154, 246 pp., with map, 1898.

285 — The aims and methods of cartography, with especial reference to the topographic maps now under construction in Maryland by the United States Geological Survey in cooperation with the Maryland Geological Survey.  
Md. Geol. Surv., vol. ii, pp. 245-335, pls. xxxiii-xlii, figs. 20-26, 1898.

286 — Lake Chelan [Washington].  
Nat. Geog. Mag., vol. ix, pp. 417-428, 7 pls. and map, 1898.  
Describes the physiographic features of the region.

287 — Stanford's Compendium of Geography and Travel (new issue).  
North America. Vol. II, the United States.  
London, Edward Stanford, 466 pp., 73 pls., 16 maps, 1898.  
Review by H. R. Mill, Nature, vol. lviii, pp. 497-498, 2 figs., 1898.

288 **George** (R. D.). [Review of Annual Report, Geological Survey of Canada, new series, vol. ix.]  
Jour. of Geol., vol. vi, pp. 857-858, 1898.

289 **Gilbert** (Grove Karl). Recent earth movements in the Great Lakes region.  
U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 601-647, pl. cv, figs. 93-101, 1898; Nat. Geog. Mag., vol. viii, pp. 233-247, figs. 1-7, 1897; Abstract, Nature, vol. lvii, pp. 211-213, fig. 1, 1897.  
Describes the general features of the region, the methods of obtaining the data, and gives a discussion and summary of results.

290 — [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]  
Jour. of Geol., vol. vi, pp. 338-340, 1898.

291 — Bowlder pavement at Wilson, New York.  
Jour. of Geol., vol. vi, pp. 771-775, pl. xiv, fig. 1, 1898.  
Describes occurrence of bowlders in till, arranged horizontally and striated on the upper surfaces. Discusses mode of formation.

292 — **Joseph Francis James**, 1857-1897.  
Am. Geol., vol. xxi, pp. 1-11, pl. i, 1898.  
Gives a sketch of his life and a list of his published papers.

293 — A proposed addition to physiographic nomenclature.  
Science, new ser., vol. vii, pp. 94-95, 1898.  
Proposes the name "discrete" for the superficial, unconsolidated material which forms a mantle over a large part of the rock mass of the earth.

294 — Origin of the physical features of the United States.  
Nat. Geog. Mag., vol. ix, pp. 308-317, pls. 8-9, 1898.  
Discusses the origin of land forms and describes the characters of the physical features of the United States.

295 — See **Diller** (J. S.), No. 234.

296 **Gilbert** (J. Z.). On the skull of *Vertebratus* (?) undata Cope. *Kan. Univ. Quart.*, vol. vii, pp. 143-148, 4 figs., 1898. Describes material from the Loup Fork beds of Kansas.

297 **Gilpin** (E.). Ores of Nova Scotia. Gold, lead, and copper. *Rept. to Comm. of Public Works and Mines*, 46 pp. and map, *Halifax, Nova Scotia*, 1898. Describes the occurrence and distribution of gold, lead, and copper deposits in Nova Scotia.

298 — The geological horizons of some Nova Scotia minerals. *Brit. Assoc. Adv. Sci.*, Rept. 1897, p. 663 ( $\frac{1}{2}$  p.), 1898. Mentions the geologic horizons at which certain minerals occur.

299 **Girty** (George H.). Description of a fauna found in the Devonian black shale of eastern Kentucky. *Am. Jour. Sci.*, 4th ser., vol. vi, pp. 384-394, 1 pl., 1898. Discusses the correlation of the black shale with the Genesee shale of New York. Describes a new subgenus and two new species.

300 — A revision of the sponges and coelenterates of the Lower Helderberg group of New York. *N. Y., 14th Ann. Rept. State Geologist*, pp. 261-309, 7 pls., 1897; *N. Y. State Mus.*, 48th Ann. Rept., vol. ii, pp. 261-309, 7 pls., 1897. Review by Stuart Weller, *Jour. of Geol.*, vol. vi, pp. 206-207 (4 l.), 1898.

301 — **Spencer** (A. C.) and. The Devonian in southwestern Colorado. See *Spencer* (A. C.) and *Girty* (G. H.), No. 725.

302 **Goldsmith** (E.). Volcanic rocks of Mesozoic age in Pennsylvania. *Phil. Acad. Nat. Sci., Proc.* 1898, pp. 90-97, pls. ii-v, 1 fig., 1898. Describes occurrence and characters of trap rocks near Pottstown, Pa.

303 **Goode** (Richard U.). Bitterroot Forest Reserve [Idaho-Montana]. *Nat. Geog. Mag.*, vol. ix, pp. 387-400, 4 figs. and map, 1898. Describes the general physiographic features of the region.

304 **Goodrich** (Harold Beach). Recent warpings as shown by drainage peculiarities [Alaska]. *U. S. Geol. Surv.*, 18th Ann. Rept., Pt. III, pp. 276-289, 1898. Describes the Alaskan drainage and the warpings of the region, as measured by the streams, and gives a summary of conclusions.

305 — See **Spurr** (J. E.), No. 739.

306 **Goodwin** (W. L.) and **Miller** (W. G.). Note on a mineral of the Columbite group. *Federated Can. Mg. Inst., Jour.*, vol. iii, pp. 151-152, 1898. Describes the occurrence of the mineral in Ontario and gives a chemical analysis.

307 **Gordon** (C. H.). Notes on the Kalamazoo and other old glacial outlets in southern Michigan.  
 Jour. of Gol., vol. vi, pp. 477-482, pl. xii, 1898.  
 Describes characteristics of glacial and postglacial drainage of the region.

308 **Gould** (Charles Newton). On a series of transition beds from the Comanche to the Dakota Cretaceous in southwest Kansas.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 169-175, 1 fig., 1898.  
 Gives a section of the beds and describes the general character of the subdivisions of the Cretaceous of the region. Presents a classification of the Cretaceous group of southwest Kansas.

309 **Grabau** (Amadeus W.). Paleontology: eastern Massachusetts.  
 Am. Assoc. Adv. Sci., fiftieth anniversary meeting. Guide to the localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 37-62, Salem, Mass., 1898.  
 Gives lists of fossils found in the geologic formations of the region and a bibliography of the subject.

310 — Paleontology of the Cambrian terranes of the Boston Basin [Massachusetts].  
 Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 305-306 (½ p.), 1898; Science, new ser., vol. viii, p. 505 (½ p.); Am. Geol., vol. xxii, pp. 264-265 (½ p.), 1898.

311 — Siluro-Devonian contact in western New York.  
 Science, new ser., vol. viii, p. 800 (½ p.), 1898.  
 Summary of paper read before the Harvard University Students' Geological Club.

312 — Geology and paleontology of Eighteenmile Creek and the lake-shore sections of Erie County, New York. Part I.  
 Buffalo Soc. Nat. Hist., Bull., vol. vi, pp. iii-xxiv, 1-91, pls. i-xxvii, 1898.  
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313 **Grant** (C. C.). Geological notes.  
 Hamilton Assoc., Jour. and Proc., No. 14, pp. 89-100, 1898.  
 Describes local features of the Silurian near Hamilton, Ontario.

314 **Grant** (U. S.). Sketch of the geology of the eastern end of the Mesabi iron range in Minnesota.  
 Univ. of Minn., Engineers' Year Book, pp. 49-62, with map, 1898.  
 Describes the physiography, geologic history, occurrence of Animikie and pre-Animikie rocks, diabase sills and gabbro, and the occurrence of iron ores.

315 — [Review of "Iowa Geological Survey, Vol. VI."]  
 Am. Geol., vol. xxi, pp. 64-65, 1898.

316 **Gratacap** (L. P.). Relation of James Hall to American geology.  
 Am. Nat., vol. xxxii, pp. 891-902, 1 pl., 1898.

317 **Gresley** (W. S.). Clay veins vertically intersecting Coal Measures. Geol. Soc. Am., Bull., vol. ix, pp. 35-58, figs. 1-27, 1898. Describes the occurrence and character of veins in coal, and discusses their age and origin. Includes a bibliography of the subject.

318 **Grimsley** (G. P.). Gypsum in Kansas. Kan. Acad. Sci., Trans., vol. xv, pp. 122-127, 1898. Describes the occurrence and distribution of the gypsum beds.

319 — The study of natural palimpsests. Kan. Acad. Sci., Trans., vol. xv, pp. 127-130, 1898. Discusses the origin of metamorphic rocks.

320 — The gypsum deposits of Kansas. The Mineral Industry, 1897, pp. 395-396, 1898. Describes the occurrence, character, and distribution of the deposits.

321 **Griswold** (Leon S.). The geology of Helena, Montana, and vicinity. Assoc. of Eng. Soc., Jour., vol. xx, No. 1, pp. 51-68, 3 figs., 1898. Describes the character and occurrence of the igneous and metamorphic rocks and of the Algonkian, Cambrian, Silurian, and Carboniferous strata and the geologic structure of the region.

322 **Gulliver** (F. P.). Classification of coastal forms. Abstracts: Science, new ser., vol. viii, p. 466 (1 p.); Am. Geol., vol. xxii, p. 253 (1 p.), 1898.

323 — Note on Monadnock. Abstract, Am. Geol., vol. xxii, p. 253 (5 l.), 1898.

324 **Gwillim** (J. C.). Some west Kootenay ore bodies [British Columbia]. Federated Can. Mg. Inst., Jour., vol. iii, pp. 19-26; Can. Mg. Rev., vol. xviii, pp. 17-19, 1898. Describes the occurrence and character of the gold, silver, and copper ores of the region.

**H.**

325 **Hall** (James). A discussion of *Streptelasma* and allied genera of rugose corals. N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 24-25, 1897. Gives a brief abstract of the paper.

326 — The Paleozoic hexactinellid sponges constituting the family *Dictyospongidae*. N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 25-26, 1897. Gives a brief abstract of the paper.

327 — and **Clarke** (John M.). The new species of Brachiopoda described in Paleontology of New York, Volume VIII, Parts I and II, 1892-1894. N. Y., 14th Ann. Rept. State Geologist, pp. 325-372, 14 pls., 4 figs.; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 325-372, 14 pls., 4 figs., 1897.

328 **Hallock** (William). Subterranean temperatures at Wheeling, West Virginia, and Pittsburg, Pennsylvania.  
 School of Mines Quart., vol. xviii, pp. 148-152, 2 figs., 1898.  
 Gives tables showing the temperatures at various depths in these wells.

329 — [Review of "Artesian wells of Iowa," by W. H. Norton.]  
 Science, new ser., vol. vii, p. 499 (½ p.), 1898.

330 **Hardman** (John E.). The gold fields of Canada.  
 Can. Mg. Rev., vol. xvii, pp. 156-163 and 184-190, 1898.  
 Describes the occurrence of gold in various provinces of Canada.

331 — Notes on some mining districts in British Columbia..  
 Federated Can. Mg. Inst., Jour., vol. ii, pp. 166-180, 1897.  
 Includes notes on the gold and silver ores of the Rossland, Nelson, Slocan Lake, and Fort Steele districts.

332 **Hardt** (Anton). The Blossburg coal region [Pennsylvania].  
 Mines and Minerals, vol. xix, pp. 126-128, 4 figs., 1898.  
 Describes briefly the occurrence of coal in the region.

333 **Harnly** (H. J.). "Cone-in-cone" (an impure calcite).  
 Kan. Acad. Sci., Trans., vol. xv, p. 22, 1898.  
 Describes occurrence of material in Cretaceous rocks of Kansas.

334 **Harris** (Gilbert D.). The Lignitic Stage, Part I. Stratigraphy and Pelecypoda.  
 Am. Pal., Bull., vol. ii, No. 9, pp. 3-102, 15 pls., 1897.  
 Reviews descriptions of the stratigraphy in various States and includes lists of references to the literature. Describes the Pelecypoda, including a number of new species.

335 **Haworth** (Erasmus). Stratigraphy of the Kansas Coal Measures.  
 Kan. Univ. Geol. Surv., vol. iii, pp. 13-105, pls. i-xxx, figs. 1-3, 1898.  
 Describes the distribution and surface features of the Mississippian series, the character, occurrence, and distribution of the subdivisions of the Coal Measures, the correlation of sections, and comparison with Missouri and Iowa Coal Measures. Discusses the nomenclature employed.

336 — Annual Bulletin on Mineral Resources of Kansas for 1897.  
 Kan. Univ. Geol. Surv., 98 pp., Lawrence, Kans., 1898.  
 Contains statistics of production of the various economic products of the State, and notes on the occurrence and character of the lead and zinc ores, on the chemical and physical properties of Kansas coals, on the occurrence and origin of the Kansas oil and gas, on the geologic features of the gypsum beds, and on the occurrence of hydraulic cement and building stones.

337 **Hay** (O. P.). Notes on species of *Ichthyodectes*, including the new species *I. cruentus*, and on the related and herein established genus *Gillicus*.  
 Am. Jour. Sci., 4th ser., vol. vi, pp. 225-232, figs. 1-5, 1898.  
 Reviews previous descriptions and describes a new species and a new genus.

338 **Hayes** (C. Willard). The continental divide in Nicaragua.

Abstracts, *Science*, new ser., vol. viii, p. 466 ( $\frac{1}{2}$  p.); *Am. Geol.*, vol. xxii, pp. 253-254 ( $\frac{1}{2}$  p.), 1898.

339 **Hedburg** (E.). Lead and zinc ores. The manner of their occurrence and their geological relation to the coal area of Missouri.

*Mines and Minerals*, vol. xviii, pp. 289-290, 3 figs., 1898.

Discusses the origin of the lead and zinc ore bodies.

340 **Herrick** (C. L.). The geology of the environs of Albuquerque, New Mexico.

*Am. Geol.*, vol. xxii, pp. 26-43, pl. vi, 5 figs., 1898.

Describes the occurrence of the igneous rocks, the Carboniferous and Cretaceous strata, and the river deposits.

341 —— The occurrence of copper and lead in the San Andreas and Caballo mountains [New Mexico].

*Am. Geol.*, vol. xxii, pp. 285-291, 1 fig., 1898.

Describes their occurrence in Carboniferous rocks and discusses the origin of the ore deposits.

342 —— Papers on the geology of New Mexico.

Dennison Univ., Sci. Lab., Bull., vol. xi, pp. 75-92, pls. ix-xii, 1898.

Describes the geology of the Socorro Mountain, Limitar, and Mount Magdalena, and includes an account of the basic eruptives of the Magdalena district.

343 —— The geology of the San Pedro and the Albuquerque districts [New Mexico].

Dennison Univ., Sci. Lab., Bull., vol. xi, pp. 93-116, pl. xiii, 1898.

Describes the geologic features of the region and the occurrence of Carboniferous and Cretaceous rocks.

344 **Hershey** (Oscar H.). Notes on the geology of Jamaica.

*Science*, new ser., vol. viii, pp. 154-155, 1898.

Describes the occurrence of a coralline limestone.

345 —— Raised shore lines on Cape Maysi, Cuba.

*Science*, new ser., vol. viii, pp. 179-180, 1898.

Describes terraces on the eastern end of Cuba.

346 **Heydon** (A. Thurston). The geology of White Pass [Alaska].

Mg. and Sci. Press, vol. lxxvii, p. 133, 1898.

Describes the general geologic features of the region and the occurrence of gold.

347 **Hidden** (W. E.). Occurrence of sperrylite in North Carolina.

*Am. Jour. Sci.*, 4th ser., vol. vi, pp. 381-383, 1898.

Describes the character, occurrence, and crystallographic characters of the material.

348 **Hidden** (W. E.) and **Pratt** (J. H.) on rhodolite, a new variety of garnet.

Am. Jour. Sci., 4th ser., vol. v, pp. 294-296; Review, Am. Nat., vol. xxxii, p. 613 ( $\frac{1}{2}$  p.), 1898.

Describes the occurrence and chemical character of the material occurring in North Carolina.

349 ——— Twinned crystals of zircon from North Carolina.

Am. Jour. Sci., 4th ser., vol. vi, pp. 323-326, 6 figs., 1898.

Describes crystallographic characters of the material.

350 ——— On the associated minerals of rhodolite.

Am. Jour. Sci., 4th ser., vol. vi, pp. 463-468, 2 figs., 1898.

Describes the characters of a number of minerals associated with rhodolite in Macon County, North Carolina, and gives chemical analyses of gahnite and iolite.

351 **Hilgard** (E. W.). See **Day** (W. C.), No. 227.

352 **Hill** (Robert T.). The geological history of the Isthmus of Panama and portions of Costa Rica. Based upon a reconnaissance made for Alexander Agassiz.

Harvard Coll., Mus. of Comp. Zool., Bull., vol. xxviii, No. 5, pp. 151-285, pls. i-viii, figs. 1-24, 1898; Review by R. D. Salisbury, Jour. of Geol., vol. vi., pp. 661-668; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 505-508, 1898.

Describes the geologic and geographic features of the Isthmus and a section across Costa Rica. Compares the two sections. Discusses the evidences of land connections between the two oceans at different geologic periods. Includes petrographic descriptions of various specimens, by H. W. Turner.

353 ——— Cuba.

Nat. Geog. Mag., vol. ix, pp. 193-242, 9 pls., 12 figs., 1898.

Includes a description of the physiographic features, geologic structure, and a geologic sketch map of the island.

354 ——— The stratigraphic succession in Jamaica.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 642 ( $\frac{1}{2}$  p.), 1898.

355 ——— and **Vaughan** (Thomas Wayland). Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 199-321, pls. xxi-lxiv, figs. 53-76, 1898.

Describes the physiography of the region, the character and occurrence of the Comanche and Gulf series and the Eocene strata and the occurrence of underground waters.

356 ——— The Lower Cretaceous Gryphaeas of the Texas region.

U. S. Geol. Surv., Bull., No. 151, 138 pp., pls. i-xxv, figs. 1-2; Review by W. T. Lee, Jour. of Geol., vol. vi, pp. 758-759, 1898.

Gives the history of the discovery of forms referred to Gryphaea pitcheri Morton, discusses their differentiation, and describes the geographic and stratigraphic distribution, classification and evolution of the Texas Lower Cretaceous Gryphaeas, with descriptions of several species.

357 **Hill** (Robert T.) and **Vaughan** (Thomas Wayland). *Nueces folio, Texas.*

U. S. Geol. Surv., Geol. map of U. S., Folio No. 42, 1898.

Describes the physiography of the quadrangle and the character and occurrence of the Cretaceous, Neocene, and Pleistocene strata. Discusses the geologic history of the region and describes the occurrence of underground waters. Includes geologic and topographic maps and a sheet of columnar sections.

358 **Hille** (F.). *The western Ontario gold fields and their genesis.*

Federated Can. Mg. Inst., Jour., vol. ii, pp. 73-92, 3 figs., 1897.

Discusses the origin of the gold ores.

359 **Hillebrand** (W. F.). *Distribution and quantitative occurrence of vanadium and molybdenum in rocks of the United States.*

Am. Jour. Sci., 4th ser., vol. vi, pp. 209-216; Review, Am. Geol., vol. xxii, p. 380 ( $\frac{1}{2}$  p.), 1898.

Gives in tabular form the amounts of these substances in a large number of rocks from various parts of the United States, describes the chemical methods employed, and gives a summary of results.

360 **Hills** (R. C.). *Ore deposits of Camp Floyd district, Tooele County [Utah].*

Colo. Sci. Soc., Proc., vol. v, pp. 54-65, 2 figs., 1898.

See Bibliography and Index for 1896, No. 318.

361 —— *The Costillo meteorite.*

Colo. Sci. Soc., Proc., vol. v, pp. 121-122, 1 pl., 1898.

See Bibliography and Index for 1896, No. 319.

362 **Hitchcock** (C. H.). *The Hudson River lobe of the Laurentide ice sheet.*

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvi, p. 292 ( $\frac{1}{2}$  p.); Science, new ser., vol. viii, p. 467 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 255 ( $\frac{1}{2}$  p.), 1898.

363 —— *The southern lobe of the Laurentide ice sheet.*

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 653-654, 1898.

Contains a brief discussion of the extent of the ice sheet in northern United States.

364 **Hoffmann** (G. Christian). *Report of the section of chemistry and mineralogy.*

Canada Geol. Surv., new ser., vol. ix, Rept. R, 53 pp., 1898.

Includes descriptions of occurrence of various minerals and chemical analyses of rocks.

365 —— *On a remarkable occurrence of xenotime.*

Am. Jour. Sci., 4th ser., vol. v, p. 235 ( $\frac{1}{2}$  p.), 1898.

Describes the characters of the mineral.

366 —— *Baddeckite, a new variety of muscovite.*

Am. Jour. Sci., 4th ser., vol. vi, pp. 274-275, 1898.

Describes its occurrence in Nova Scotia and its chemical analysis.

367 **Hollick** (Arthur). *Notes on Block Island [Rhode Island].*

N. Y. Acad. Sci., Annals, vol. xi, pp. 55-72, pls. ii-ix, 1898.

Includes notes on the geology and paleontology of the island.

368 **Hollick** (Arthur). Additions to the paleobotany of the Cretaceous formation on Staten Island [New York]. No. II.  
 N. Y. Acad. Sci., Annals, vol. xi, pp. 415-430, pls. xxxvi-xxxviii, 1898.  
 Describes the relations of the Cretaceous strata and illustrates and describes some of the fossil plants.

369 — Geological notes. Long Island and Block Island.  
 N. Y. Acad. Sci., Trans., vol. xvi, pp. 9-18, 1898.  
 Describes results of a study of the Cretaceous deposits and gives lists of fossils collected.

370 — The Cretaceous clay marl exposure at Cliffwood, New Jersey.  
 N. Y. Acad. Sci., Trans., vol. xvi, pp. 124-134, pls. xi-xiv, 1898.  
 Discusses the stratigraphic relations and describes some of the fossils collected.

371 — Further notes on Block Island. Geology and botany.  
 Am. Geol., vol. xxi, pp. 200-201 ( $\frac{1}{2}$  p.), 1898.  
 Contains summary of paper read before the New York Academy of Sciences.

372 — The age of the Amboy clay series, as indicated by its flora.  
 Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 292-293; Science, new ser., vol. viii, pp. 467-468; Am. Geol., vol. xxii, pp. 255-256, 1898.

373 — Further notes on Block Island. Geology and botany.  
 Abstract, Science, new ser., vol. vii, pp. 178-179, 1898.  
 Summary of paper read before the New York Academy of Sciences.

374 — Some features of the drift on Staten Island, New York.  
 Abstracts, Science, new ser., vol. viii, p. 463 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 249 ( $\frac{1}{2}$  p.), 1898.

375 — Notes on the glacial phenomena of Staten Island [New York].  
 Science, new ser., vol. viii, p. 840 ( $\frac{1}{2}$  p.), 1898.  
 Contains summary of paper read before the New York Academy of Sciences.

375a — See **Newberry** (J. S.), No. 573a.

376 **Hopkins** (Thomas C.). Concentric weathering in sedimentary rocks.  
 Geol. Soc. Am., Bull., vol. ix, pp. 427-428, pls. 27-29; Abstract, Science, new ser., vol. vii, p. 84 (9 l.), 1898.  
 Describes weathering of sedimentary rocks along the Ohio River.

377 — Some feldspars in serpentine, southeastern Pennsylvania.  
 Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 293-294 ( $\frac{1}{2}$  p.); Science, new ser., vol. viii, p. 468 (13 l.); Am. Geol., vol. xxii, p. 256 (9 l.), 1898.  
 Describes occurrence of feldspars and associated minerals in serpentine.

378 — Fire clays.  
 Mines and Minerals, vol. xix, pp. 53-55, 1 fig., 1898.  
 Describes the characters of fire clay and its occurrence in Pennsylvania.

379 **Horsewill** (T. J.). Tesla coal mines [Alameda County, California].  
 Mines and Minerals, vol. xix, pp. 145-147, 5 figs., 1898.  
 Describes the occurrence of coal.

380 **Hosea** (R. M.). Anthracite in the Rockies.  
 Mines and Minerals, vol. xviii, pp. 529-533, 5 figs.; vol. xix, pp. 7-9, 2 figs., 1898.  
 Describes occurrence of anthracite coal in Colorado.

380a **Hovey** (E. O.). Catalogue of the meteorites in the collection of the American Museum of Natural History to July, 1896.  
 Am. Mus. Nat. Hist., Bull., vol. viii, pp. 149-155, 1896.

380b —— Notes on the artesian well sunk at Key West, Florida, in 1895.  
 Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, pp. 65-91; Abstract, Am. Geol., vol. xviii, p. 218, 1896.

381 —— See **Whitfield** (R. P.), No. 877.

382 **Hull** (Edward). Prof. J. W. Spencer on changes of level in Mexico.  
 Geol. Mag., dec. iv, vol. v, pp. 193-195, 1898.  
 Reviews recent papers by J. W. Spencer.

**I.**

383 **Iddings** (Joseph P.). On rock classification.  
 Jour. of Geol., vol. vi, pp. 92-111, 6 figs.; Review, Am. Nat., vol. xxxii, pp. 465-466, 613-614; Abstract, Science, new ser., vol. vii, pp. 83-84 ( $\frac{1}{2}$  p.), 1898.  
 Discusses the nature and characteristics of rocks, the results of the study of the chemical composition of igneous rocks, and the chemical relations and nature of rocks genetically connected.

384 —— Chemical and mineral relationships in igneous rocks.  
 Jour. of Geol., vol. vi, pp. 219-237, pls. ix-x; Review, Am. Geol., vol. xxii, p. 381 ( $\frac{1}{2}$  p.), 1898.  
 Discusses the occurrence of quartz, and of leucite and nephelite in igneous rocks, the interdependence of various minerals, and the chemical composition of the magma.

385 —— [Review of "Volcanoes of North America: A reading lesson for students of geography and geology," by Israel C. Russell.]  
 Jour. of Geol., vol. vi, pp. 434-435, 1898.

386 —— Bysmaliths.  
 Jour. of Geol., vol. vi, pp. 704-710, 1 fig., 1898.  
 Applies the term to an intruded plug or core of igneous rock.  
 Describes their manner of occurrence and refers to certain examples.

387 —— [Review of "A text-book of mineralogy, with an extended treatise on crystallography and physical mineralogy," by E. S. Dana.]  
 Jour. of Geol., vol. vi, pp. 756-757, 1898.

388 **Iddings** (Joseph P.). [Review of "Manual of determinative mineralogy with an introduction on blowpipe analysis," by George J. Brush.]

Jour. of Geol., vol. vi, pp. 757-758, 1898.

389 —— See **Diller** (J. S.), No. 234.

390 **Irving** (J. D.). Contact-metamorphism of the Palisades diabase.

Am. Geol., vol. xxi, p. 398 ( $\frac{1}{2}$  p.); Science, new ser., vol. vii, p. 683 ( $\frac{1}{2}$  p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

**J.**

391 **Jaggar** (T. A., jr.). Some conditions affecting geyser eruptions.

Am. Jour. Sci., 4th ser., vol. v, pp. 323-333, 1 fig. Abstract, Nature, vol. lviii, pp. 261-263, 1898.

Describes geyser phenomena of the Yellowstone National Park and the results of certain experiments. Discusses their bearing on the question of the cause of the various phases of geyser activity.

392 —— An occurrence of acid pegmatite in diabase.

Am. Geol., vol. xxi, pp. 203-213, pl. xiv, 1898.

Describes rocks from the Boston Basin.

393 **Jefferson** (M. S. W.). The postglacial Connecticut, at Turners Falls, Massachusetts.

Jour. of Geol., vol. vi, pp. 463-472, 7 figs., 1898.

Describes the changes of drainage and the postglacial history of the vicinity.

394 **Jennison** (W. F.). Manganese deposits of Nova Scotia.

Federated Can. Mg. Inst., Jour., vol. iii, pp. 167-172, 1898.

Gives a brief sketch of the manganese deposits of Nova Scotia.

395 **Jones** (A. W.). The Mentor beds.

Kan. Acad. Sci. Trans., vol. xv, pp. 111-112, 1898.

Describes the general character and occurrence of the beds in the Lower Cretaceous and gives a list of fossils.

396 **Jones** (Lee H.). The upper limit of the Knobstone in the region of Borden, Indiana.

Ind. Acad. Sci., Proc., 1897, pp. 257-258, 1898.

Describes the areal extent of the group in the region.

397 **Jones** (T. Rupert). On some Triassic (?) Estheriae from the Red beds or Cimarron series of Kansas.

Geol. Mag., dec. iv, vol. v, pp. 291-293, 1898.

Gives brief notes on some specimens.

398 **Jopling** (James E.). The Marquette Range. Its discovery, development, and resources.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 541-555, figs. 1-11, 1898.

Includes brief notes on the iron ore bodies and cross sections.

399 —— See **Birkinbine** (John), No. 78.

400 **Joseph (M. H.).** The Republic mine [Washington].  
Eng. and Mg. Jour., vol. lxvi, pp. 545-546, 2 figs., 1898.  
Includes notes on the occurrence of gold and silver.

401 **Julien (A. A.).** The elements of strength and weakness in building stones.  
Am. Geol., vol. xxi, pp. 397-398; Science, new ser., vol. vii, p. 683 (½ p.), 1898.  
Contains summary of paper read before the New York Academy of Sciences.

**K.**

402 **Keith (Arthur), Darton (N. H.) and.** On dikes of felsophyre and basalt in Paleozoic rocks in central Appalachian Virginia.  
See Darton (N. H.) and Keith (A.), No. 198.

403 **Kemp (James Furman).** The geology of the magnetites near Port Henry, New York, and especially those of Mineville.  
Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 146-203, pls. i-ix, figs. 1-12, 1898.  
Describes the general geologic features of the region, the occurrence, character, chemical composition, relations, and origin of the nontitaniferous ore bodies. Includes a bibliography of the subject.

404 — The geology of Moriah and Westport townships, Essex County, New York, with a geologic map.  
N. Y. State Mus., 48th Ann. Rept., vol. i, Appendix, pp. 325-355, 3 pls., 5 figs., and geologic map, 1897.  
See Bibliography and Index for 1895, No. 245.

405 — Preliminary report on the geology of Essex County [New York].  
N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 22-23, 575-614, pls. i-xii, 2 figs., 1897.  
Describes the occurrence and distribution of the igneous, Cambrian, and Silurian rocks in the several townships, and includes notes on the iron ores.

406 — Geology of the Lake Placid region [New York].  
N. Y. State Mus., Bull., vol. v, No. 21, pp. 51-67, 1 pl., and geologic map, 1898.  
Describes the character and age of the crystalline rocks and the glacial features of the region.

407 — [Geology and its relations to topography.]  
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 79-82, 1898.  
In discussion of paper by John C. Branner on the same subject, describes the topography of the vicinity of New York.

408 — The glacial or postglacial diversion of the Bronx River [New York] from its old channel.  
N. Y. Acad. Sci., Trans., vol. xvi, pp. 18-24, 1 fig., 1898.  
Discusses the recent geologic history of this river.

409 **Kemp** (James Furman). Some remarks on titaniferous magnetites.  
Am. Geol., vol. xxii, p. 62 (½ p.), 1898.  
Contains summary of paper read before the New York Academy of Sciences.

410 — [Abstracts of papers read before the Geological Society of America at the Montreal meeting, December, 1897.]  
Science, new ser., vol. vii, pp. 48-53, 79-85, 1898.

411 — [Review of "The Marquette iron-bearing district of Michigan, with atlas," by C. R. Van Hise and W. S. Bayley.]  
Science, new ser., vol. vii, pp. 137-138, 1898.

412 — Minerals of the copper mines at Ducktown, Tennessee.  
Science, new ser., vol. viii, pp. 839-840, (½ p.), 1898.  
Contains summary of paper read before the New York Academy of Sciences.

413 — Geological occurrence and associates of the telluride gold ores.  
The Mineral Industry, 1897, pp. 295-320, 1898.  
Refers to occurrence of telluride ores in the United States and other countries and gives list of papers describing such occurrences.

414 **Kennedy** (J. C.). The Wyoming copper region.  
Eng. and Mg. Jour., vol. lxvi, pp. 640-641, 1 fig., 1898.  
Describes the general geology of the locality in southern Wyoming and the occurrence of copper.

415 **Keyes** (Charles R.). The geological occurrence of clays.  
Mo. Geol. Surv., vol. xi, pp. 35-48, 1896.  
Describes the occurrence of clay in the various geologic formations of Missouri.

416 — The use of local names in geology.  
Jour. of Geol., vol. vi, pp. 161-170, 1898.  
Discusses the general principles of geologic nomenclature and the use of local names in stratigraphy.

417 — [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]  
Jour. of Geol., vol. vi, pp. 347-352, 1898.

418 — Probable stratigraphical equivalents of the Coal Measures of Arkansas.  
Jour. of Geol., vol. vi, pp. 356-365, 2 figs., 1898.  
Describes the sequence of the Coal Measures of Arkansas and discusses their relations with the Des Moines and Missourian series.

419 — [Review of recent papers on the stratigraphy of the southern Ozarks.]  
Jour. of Geol., vol. vi, pp. 652-658, 1898.

420 **Keyes** (Charles R.) The genetic classification of geological phenomena.  
 Jour. of Geol., vol. vi, pp. 809-815, 1898.  
 Discusses previous attempts to form a genetic classification and gives a table showing the classification of geologic phenomena by genesis.

421 —— [Review of "Batesville sandstone of Arkansas," by Stuart Weller.]  
 Am. Geol., vol. xxi, pp. 129-131, 1898.

422 —— [Review of "Geology of Massanutten Mountain in Virginia," by A. C. Spencer.]  
 Am. Geol., vol. xxi, pp. 191-192, 1898.

423 —— Use of the term Augusta in geology.  
 Am. Geol., vol. xxi, pp. 229-235, 1898.  
 Discusses the nomenclature of the Mississippian series.

424 —— Carboniferous formations of southwestern Iowa.  
 Am. Geol., vol. xxi, pp. 346-350, 1898.  
 Gives a brief description of the subdivisions of the Missourian series exposed in this portion of the State.

425 —— Remarks on the classification of the Mississippian series.  
 Am. Geol., vol. xxii, pp. 108-113, 1898.  
 Discusses the use of the terms Osage and Augusta, as subdivisions of the Mississippian series.

426 —— [Review of "Occurrence of fossil fishes in the Devonian of Iowa," by Charles R. Eastman.]  
 Am. Geol., vol. xxii, pp. 237-239, 1898.

427 —— [Review of "The special report on Kansas coal," by Erasmus Haworth and W. R. Crane.]  
 Am. Geol., vol. xxii, pp. 384-388, 1898.

428 —— Eolian origin of the loess.  
 Am. Jour. Sci., 4th ser., vol. vi, pp. 299-304, 1898.  
 Discusses the origin of the loess of the Mississippi Valley.

429 —— Geographic development of the Crimea.  
 Iowa Acad. Sci., Proc., vol. v, pp. 52-54, 5 figs., 1898.  
 Includes a brief statement of the method of stratigraphic correlation termed orotaxis and of the relations of grade plain and great plane of sedimentation.

430 —— Carboniferous formations of the Ozark region.  
 Iowa Acad. Sci., Proc., vol. v, pp. 55-58, 1898.  
 Describes the general relations of the formations in the Ozark region and gives a table of correlation.

431 —— Some geological formations of the Cap-au-Gres uplift [Missouri].  
 Iowa Acad. Sci., Proc., vol. v, pp. 58-63, pls. i-iii, 1898.  
 Describes a fault at the locality, the general geologic section, and names and describes a number of new formations.

432 **Keyes** (Charles R.). Modern stratigraphical nomenclature.

Science, new ser., vol. vii, pp. 571-572, 1898.

Discusses some principles of stratigraphic nomenclature.

433 — The myth of the Ozark Isle.

Science, new ser., vol. vii, pp. 588-589, 1898.

Gives a summary of the geologic history of the Ozark region.

434 — The principal Missourian section.

Abstracts, Science, new ser., vol. viii, p. 464 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 251 ( $\frac{1}{2}$  p.), 1898.

435 — Structure of the coal deposits of the trans-Mississippian field.

Eng. and Mg. Jour., vol. lxv, pp. 253-254 and 280-281; Review, Zeit für prak. geol., 1898, heft 5, pp. 169-171, 1898.

Describes the general character of the rocks, the structure of the coal region and the occurrence and character of the coal beds.

436 **Killebrew** (J. B.). Mining Tennessee phosphates.

Abstract, Eng. and Mg. Jour., vol. lxvi, p. 68 ( $\frac{1}{2}$  p.), 1898.

Includes notes on the occurrence of the phosphate deposits of Tennessee.

437 **Kimball** (James P.). Residual concentration by weathering as a mode of genesis of iron ores.

Am. Geol., vol. xxi, pp. 155-163, 1898.

Describes iron ores occurring in Washington and discusses the origin of such deposits.

438 **Kindle** (Edward M.). A catalogue of the fossils of Indiana, accompanied by a bibliography of the literature relating to them.

Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 407-514, 1898.

Gives a list of fossils and their geologic occurrence and a bibliography arranged alphabetically by authors' names.

439 **King** (Francis P.), **McCallie** (S. W.), **Yeates** (W. S.), and. A preliminary report on a part of the gold deposits of Georgia.

See Yeates (W. S.), McCallie (S. W.), and King (F. P.), No. 941.

440 **Kirby** (E. B.). The gold-ore deposits of Mount Caribou, Idaho.

Colo. Sci. Soc., Proc., vol. v, pp. 72-75, 1898.

Describes the ore bodies and discusses their origin.

441 — [Occurrence of ore chutes].

Colo. Sci. Soc., Bull., No. 10, pp. 5-6, 1898.

Describes the occurrence of two ore chutes.

442 **Kirchner** (Walter C. G.). Contribution to the fossil flora of Florissant, Colorado.

St. Louis Acad. Sci., Trans., vol. viii, pp. 161-188, pls. xi-xv, 1898.

Gives a list of plants previously described and describes several new species. Includes a bibliography.

443 **Knapp** (S. A.). Occurrence and treatment of the carbonate of soda deposits of the Great Basin.  
 Mg. and Sci. Press., vol. lxxvii, p. 448, 1898.  
 Describes the occurrence and character of the soda deposits in western Nevada.

444 **Knight** (F. C.). A suspected new mineral from Cripple Creek [Colorado].  
 Colo. Sci. Soc., Proc., vol. v, pp. 66-71, 1898.  
 See Bibliography and Index for 1896, No. 412.

445 **Knight** (Wilbur C.). Some new Jurassic vertebrates from Wyoming.  
 First paper.  
 Am. Jour. Sci., 4th ser., vol. v, p. 186, 2 figs., 1898.  
 Describes two new species of *Ceratodus*.

446 — Some new Jurassic vertebrates from Wyoming. Second paper.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 378-381, 3 figs., 1898.  
 Describes a new genera and species, *Megalneusaurus rex*.  
 Suggests the name *Como group* for the beds in which the fossil occurs.

447 — The building stones and clays of Wyoming.  
 Eng. and Mg. Jour., vol. lxvi, pp. 546-547 ( $\frac{1}{2}$  p.), 1898.  
 Includes brief notes on their occurrence.

448 — The natural soda deposits of Wyoming.  
 The Mineral Industry, 1897, pp. 612-616, 2 figs., 1898.  
 Describes the occurrence and character of the soda deposits.

449 — See **Oliphant** (F. H.), No. 580.

450 **Knowlton** (Frank Hall). A catalogue of the Cretaceous and Tertiary plants of North America.  
 U. S. Geol. Surv., Bull., No. 152, 247 pp., 1898.  
 Gives a list of North American works and papers consulted, an alphabetic list of Cretaceous and Tertiary plants, with reference to the original date and place of publication of each genus, synonym, and geographic and geologic distribution.

451 — [Fossil plants from San Pablo formation, California.]  
 Jour. of Geol., vol. vi, p. 498, 1898.  
 Gives list of plants determined and considers them of Pliocene age.

452 — [Description of *Pityoxylon hollicki* n. sp.]  
 N. Y. Acad. Sci., Trans., vol. xvi, pp. 234-236, 2 figs., 1898.

453 — The Belly River horizon on the Upper Missouri.  
 Science, new ser., vol. vii, p. 429 ( $\frac{1}{3}$  p.), 1898.  
 Contains summary of paper read before the Geological Society of Washington.

454 — The standing fossil forests of the Yellowstone National Park.  
 The Plant World, vol. i, pp. 53-55, pl. 1, 1898.  
 Describes the general features of the fossil forests.

455 **Knowlton** (Frank Hall). In a coal swamp.

The Plant World, vol. ii, pp. 21-23, 1 pl., 1898.

Gives a brief account of the plants of the Coal Measures.

456 **Kümmel** (Henry B.). The Newark system or Red Sandstone belt [New Jersey].

N. J. Geol. Surv., Ann. Rept., 1898, pp. 23-159, pls. ii-ix, figs. 1-25, 1898.

Describes the character, occurrence, and structure of the sedimentary and trap rocks and metamorphosed shales and their economic resources within the State.

457 — The age of the artifact-bearing sand at Trenton [New Jersey].

Science, new ser., vol. vii, pp. 115-117, 1898.

Discusses the age and origin of the sand.

458 **Kunz** (George F.). Meteoric stone from Andover [Maine].

Science, new ser., vol. viii, p. 840 ( $\frac{1}{4}$  p.), 1898.

Contains summary of paper read before the N. Y. Academy of Sciences.

## L.

459 **Ladd** (George E.). Geological phenomena resulting from the surface tension of water.

Am. Geol., vol. xxii, pp. 267-285, pl. viii, 1898.

Discusses phenomena produced by capillary flocculation and floating of materials.

460 **Lakes** (Arthur). The geology of Aspen and the conditions existing in the Smuggler mine at the time of the fire [Colorado].

Mines and Minerals, vol. xviii, pp. 251-253, 3 figs., 1898.

Describes the general geologic features of the region.

461 — Silver Cliff district [Colorado].

Mines and Minerals, vol. xviii, pp. 296-297, 3 figs., 1898.

Describes the occurrence of the gold and silver ore bodies.

462 — Volcanic craters. Real and false craters and their relation to mining and ore deposits.

Mines and Minerals, vol. xviii, pp. 321-322, 2 figs., 1898.

Discusses the occurrence of volcanic vents in Colorado.

463 — Rosita and Silver Cliff [Colorado].

Mines and Minerals, vol. xviii, pp. 344-346, 5 figs., 1898.

Describes the occurrence of the silver-lead ores of the region.

464 — Telluride ores.

Mines and Minerals, vol. xviii, pp. 369-370, 1898.

Describes the character and occurrence of some of the telluride ore deposits of Colorado.

465 — Prospecting experiences.

Mines and Minerals, vol. xviii, pp. 398-400, 4 figs., 1898.

Describes geologic features about Salida and Rosita, Colorado.

466 **Lakes** (Arthur). The El Paso coal field [Colorado].  
 Mines and Minerals, vol. xviii, pp. 483-484, 2 figs., 1898.  
 Describes the occurrence of coal north of Colorado Springs, Colorado.

467 — The fluorine mine [Cripple Creek, Colorado].  
 Mines and Minerals, vol. xviii, pp. 489-491, 7 figs., 1898.  
 Describes the occurrence of the igneous rocks of the region and the occurrence of gold.

468 — Ore occurrence in the Red Mountain district, Colorado.  
 Mines and Minerals, vol. xviii, pp. 513-514, 1898.  
 Describes the occurrence of the silver and copper ores of the region.

469 — Tellurium and the telluride ores.  
 Mines and Minerals, vol. xviii, pp. 533-535, 1 fig., 1898.  
 Describes the general characters of the telluride ores of Colorado.

470 — A peculiar ore body.  
 Mines and Minerals, vol. xviii, p. 558, 1898.  
 Quotes a description of the Ann Lee Mine, Cripple Creek, Colorado, by R. A. F. Penrose, jr.

471 — Ores of the Vulcan mine [Colorado].  
 Mines and Minerals, vol. xviii, pp. 562-563, 1 fig., 1898.  
 Describes occurrence of gold ores in Gunnison County, Colorado.

472 — Mount Caribou gold deposits [Idaho]  
 Mines and Minerals, vol. xix, pp. 55-56, 2 figs., 1898.  
 Describes the occurrence and origin of the ore deposits

473 — The Wyoming oil fields.  
 Mines and Minerals, vol. xix, p. 80, 1 fig., 1898.  
 Describes the occurrence of oil in the Salt Creek field.

474 **Landes** (Henry). The Deu Pree lode, Washington.  
 Eng. and Mg. Jour., vol. lxv, pp. 39-40, 3 figs., 1898.  
 Describes the occurrence of gold in the Cascade range of Washington.

475 **Lane** (A. C.). Magmatic differentiation in the rocks of the copper-bearing series.  
 Abstracts, Science, new ser., vol. viii, p. 465 (1 p.); Am. Geol., vol. xxii, p. 251 (1 p.), 1898.

476 — Note on a method of stream capture.  
 Abstracts. Science, new ser., vol. viii, p. 465 (1 p.); Am. Geol., vol. xxii, p. 252 (1 p.), 1898.

477 **Lawson** (William), **Ellis** (W. Hodgson) and. Chemical notes on the so-called Sudbury coal [Ontario].  
 See Ellis (W. H.) and Lawson (W.), No. 252.

478 **Le Conte** (Joseph). [Contributions to "A symposium of the classification and nomenclature of geologic time divisions."] Jour. of Geol., vol. vi, pp. 337-338, 1898.

479 **Lee** (Harry A.). Report of the State Bureau of Mines for the year 1897 [Colorado].  
 Denver, Colo., 167 pp., 1898.  
 Describes the character, occurrence, and production in 1897 of the economic mineral products of the various counties of Colorado.

480 **Lee** (W. T.). [Review of "The Lower Cretaceous Gryphaeas of the Texas region," by R. T. Hill and T. W. Vaughan].  
 Jour. of Geol., vol. vi, pp. 758-759, 1898.

481 **Leidy** (Joseph). Fossil vertebrates from the Alachua clays of Florida.  
 Wagner Free Inst. of Sci., Trans., vol. iv, pp. 61, pls. i-xix, 1896.  
 Describes the localities and the material obtained. Includes notes by F. A. Lucas and W. H. Dall.

482 **Leith** (C. K.). Summaries of current North American pre-Cambrian literature.  
 Jour. of Geol., vol. vi, pp. 527-541, 739-753, and 840-854, 1898.

483 **Leonard** (A. G.). Geology of Dallas County [Iowa].  
 Iowa Geol. Surv., vol. viii, pp. 53-118, pls. iv-vi, figs. 1-8, and geologic map, 1898.  
 Describes the physiography, the occurrence and character of the Carboniferous and Pleistocene formations, and the occurrence of coal, clay, building stone, road material, and natural gas.

484 — **Bain** (H. F.) and. The Middle Coal Measures of the western interior coal fields.  
 See Bain (H. F.) and Leonard (A. G.), No. 45.

485 **Leverett** (Frank). The Peorian soil and weathered zone (Toronto formation?).  
 Jour. of Geol., vol. vi, pp. 244-249, 1898.  
 Describes the occurrence of the formation and its bearing on the evidence of deglaciation within the glacial period.

486 — Correlation of moraines with beaches on the border of Lake Erie.  
 Am. Geol., vol. xxi, pp. 195-199, 1898.  
 Reviews some of the researches on the glacial phenomena of the region.

487 — The weathered zone (Sangamon) between the Iowan loess and Illinoian till sheet.  
 Iowa Acad. Sci., Proc., vol. v, pp. 71-80, pl. iv; Jour. of Geol., vol. vi, pp. 171-181; Abstract, Am. Geol., vol. xxi, pp. 254-255, 1898.  
 Describes the distribution of the loess and till sheet and the character of the Sangamon soil horizon which occurs between them.

488 — The weathered zone (Yarmouth) between the Illinoian and Kansas till sheets.  
 Iowa Acad. Sci., Proc., vol. v, pp. 81-86; Jour. of Geol., vol. vi, pp. 238-243; Abstract, Am. Geol., vol. xxi, p. 254 (§ p.), 1898.  
 Describes the character and occurrence of the Yarmouth zone in Iowa.

489 **Levy** (Louis Edward). See **Cabrera** (R.), No. 117.

490 **Lincoln** (D. F.). Report on the structural and economic geology of Seneca County [New York].

N. Y. 14th Ann. Rept. State Geologist, pp. 60-125, pls. 1-19, 12 figs.; N. Y. State Mus. 48th Ann. Rept., vol. ii, pp. 60-125, pls. 1-19, 12 figs., 1897; Review by Stuart Weller, *Jour. of Geol.*, vol. vi, pp. 205-206 (½ p.), 1898.

Describes the glacial phenomena of the region, the occurrence and character of the Silurian and Devonian strata, and of the economic products. Includes a list of papers on the region.

491 **Lindgren** (Waldemar). The mining districts of the Idaho Basin and the Boise Ridge, Idaho. With a report on the fossil plants of the Payette formation by Frank Hall Knowlton.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 625-736, pls. lxxxvii-cii, figs. 55-65, 1898.

Describes the general geologic history and the occurrence and character of the ore deposits and of the Tertiary and Pleistocene strata, and includes a report on the fossil plants of the Payette formation.

492 —— Boise folio, Idaho.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 45, 1898.

Describes the geologic and physiographic features of the quadrangle, the character and occurrence of the Tertiary, Pleistocene, and igneous rocks, and the occurrence of gold-bearing gravels and veins, coal, building stones, and artesian waters. Includes topographic and geologic maps and structure sections.

493 —— Orthoclase as gangue mineral in a fissure vein.

Am. Jour. Sci., 4th ser., vol. v, pp. 418-420, Mg. and Sci. Press, vol. lxxvii, p. 32, 1898.

Describes occurrence of orthoclase in ore deposits and discusses its origin.

494 —— The canyons of the Salmon and Snake rivers [Idaho].

Abstracts, *Science*, new ser., vol. vii, pp. 71-72; Eng. and Mg. Jour., vol. lxv, p. 158 (½ p.), 1898.

Describes the general physiographic features of the region. Comprises summary of paper read before the Geological Society of Washington.

495 —— The primary gold deposits of the Sierra Nevada.

Mg. and Sci. Press, vol. lxxvi, pp. 258-259, 1898.

Describes the occurrence and character of the ore deposits and discusses their origin.

496 —— See **Diller** (J. S.), No. 234.

497 **Linton** (Edward). On the formation of new ravines.

Am. Geol., vol. xxi, pp. 329-330, 1898.

Describes the formation of gullies in the deforested areas of the South, with special reference to a particular locality.

498 **Logan** (W. N.). The invertebrates of the Benton, Niobrara, and Ft. Pierre Cretaceous.

Kan. Univ. Geol. Surv., vol. iv, pp. 431-583, pls. lxxxvi-cxx, 1898.

**499 Lord (E. C. E.).** On the dikes in the vicinity of Portland, Maine.  
 Am. Geol., vol. xxii, pp. 335-346, pl. x, 1898.  
 Describes the Glacial phenomena of the region and the occurrence and petrographic character of the dike rocks.

**500 Low (A. P.).** Report on a traverse of the northern part of the Labrador peninsula from Richmond Gulf to Ungava Bay.  
 Canada Geol. Surv., new ser., vol. ix, Rept. L, 43 pp., 4 pls., 1898.  
 Describes the drainage and physical features and the occurrence and character of the Laurentian and Cambrian rocks and Glacial phenomena.

**501 Lucas (F. A.).** Contributions to paleontology.  
 Am. Jour. Sci., 4th ser., vol. vi, pp. 399-400, 1898.  
 Describes a new genus and species of crocodile and a new species of *Dinictis*.

**502** — See **Leidy (Joseph)**, No. 481.

**503 Lukis (Ernest du B.).** A new copper deposit in Mexico.  
 Eng. and Mg. Jour., vol. lxv, pp. 279-280, 2 figs., 1898.  
 Describes occurrence in the State of Puebla.

**504 Luther (D. Dana).** The stratigraphic position of the Portage sandstones in the Naples Valley and the adjoining region [New York].  
 N. Y., 15th Ann. Rept., State Geologist, vol. i, pp. 13-14, 227-236, pls. i-ii, and geologic map, 1897; N. Y. State Mus. 49th Ann. Rept., vol. ii, pp. 227-236, pls. i-ii, and geologic map, 1898.  
 Describes the lithologic and faunal characters of the Portage sandstones of the region.

**505** — The economic geology of Onondaga County [New York].  
 N. Y., 15th Ann. Rept., State Geologist, vol. i, pp. 14-16, 241-303, pls. i-xxi, figs. 1-12, 1897; N. Y. State Mus. 49th Ann. Rept., vol. ii, pp. 241-303, pls. i-xxi, figs. 1-12, 1898.  
 Describes the character and occurrence of the Silurian, Devonian and Pleistocene formations and the occurrence of salt, gypsum, building stone and cement.

**506 Lyman (Benjamin Smith).** Some illustrations of the influence of geological structure on topography.  
 Franklin Inst., Jour., vol. cxlv, pp. 355-360, 4 pls., 1898.  
 Describes a portion of the Punjab salt range and observes similar effects in Appalachian topography.

**507** — Copper traces in Bucks and Montgomery counties [Pennsylvania].  
 Franklin Inst., Jour., vol. cxlvi, pp. 416-423, with map, 1898.  
 Describes the occurrence and the character of the formation in which they occur.

**508** — [Geology and its relation to topography.]  
 Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 82-94, pl. ii, 1898.  
 In discussion of paper by John C. Branner on the same subject.

## M.

509 **Mabry** (T. O.). The brown or yellow loam of north Mississippi and its relation to the northern drift.

Jour. of Geol., vol. vi, pp. 273-302, 2 figs., 1898.

Describes the character, relations, and distribution of the brown or yellow loam, its relation to the Lafayette and Loess formations, and discusses the origin and age of the Loess loam.

510 **McCallie** (S. W.). A preliminary report on a part of the phosphates and marls of Georgia.

Ga. Geol. Surv., Bull. No. 5-A, 98 pp., 3 pls., 6 figs., 1896.

Describes the general distribution of phosphates and the occurrence, character, and distribution of the Georgia phosphates. Discusses the origin of phosphates.

511 — **King** (F. P.), and **Yeates** (W. S.). A preliminary report on a part of the gold deposits of Georgia.

See Yeates (W. S.), McCallie (S. W.), and King (F. P.), No. 941.

512 **McCalley** (Henry). See **Birkinbine** (John), No. 78.

513 **McCharles** (A.). Nickel mining in the Sudbury district [Canada].

The Mineral Industry, 1897, pp. 501-503, 1898.

Includes brief notes on the occurrence of nickel.

514. **McClung** (C. E.). Microscopic organisms of the Upper Cretaceous.

Kan. Univ. Geol. Surv., vol. iv, pp. 413-429, pl. lxxxv, 1898.

Gives a general description of the forms occurring in the Upper Cretaceous chalk of Kansas, with a description of several species, including one new one.

515 **McGee** (W. J.). Geographic development of the District of Columbia.

Nat. Geog. Mag., vol. ix, pp. 317-323, 1898.

Describes the geologic and geographic history of the region.

515a **Madeira** (George). See **Day** (W. C.), No. 227.

516 **Maguire** (Don.). Gold mines of Mercur [Utah].

Mines and Minerals, vol. xix, pp. 81-83, 2 figs., 130-131, 1898.

Describes the occurrence of the ore bodies of the region.

517 **Marbut** (Curtis Fletcher). Geology of the Clinton sheet [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 20-104, 6 figs., and geologic map and cross sections, 1898.

Describes the physiographic features, the character, occurrence, and relations of the subdivisions of the Carboniferous formations, and the occurrence of the economic products of the region.

518 — Geology of the Calhoun sheet [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 108-191, figs. 7-17, and geologic map and cross sections, 1898.

Describes the physiographic features, the character of the subdivisions of the Carboniferous and Silurian formations, the geologic structure, and the occurrence of coal, clay, building stones, and lime.

519 **Marbut** (Curtis Fletcher). Geology of the Lexington sheet [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 196-247, figs. 18-23, and geologic map and cross sections, 1898.

Describes the physiographic features, the occurrence and character of the Carboniferous and Pleistocene formations and the occurrence of coal, building stones, and clays.

520 — Geology of the Richmond quadrangle, including portions of Ray and Carroll counties [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 252-308, figs. 24-29, and geologic map and cross sections, 1898.

Describes the physiographic features of the region, the character and occurrence of the Carboniferous and Pleistocene formations, and the occurrence of coal, building stones, and clays.

521 — Geology of the Huntsville quadrangle, including portions of Randolph, Howard, and Chariton counties [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 312-371, figs. 30-37, and geologic map, 1898.

Describes the physiography, the occurrence and character of the Carboniferous and Pleistocene formations, and the occurrence of coal and clays.

522 — Cote sans Dessein and Grand Tower [Missouri].

Am. Geol., vol. xxi, pp. 86-90, pl. x; Review by W. M. Davis, Science, new ser., vol. vii, p. 273 ( $\frac{1}{2}$  p.), 1898.

Describes the character and origin of certain physiographic features.

523 **Marsh** (O. C.). New species of Ceratopsia.

Am. Jour. Sci., 4th ser., vol. vi, p. 92, 1898.

Describes two new species from the Ceratops beds.

524 — Jurassic formation on the Atlantic coast. Supplement.

Am. Jour. Sci., 4th ser., vol. vi, pp. 105-115, 1 fig.; Abstract, Science, new ser., vol. viii, pp. 145-154, 1898.

Discusses a number of reviews of a former paper on this subject.

525 — Cycad horizons in the Rocky Mountain region.

Am. Jour. Sci., 4th ser., vol. vi, p. 197, 1898.

Gives a brief account of their occurrence in the Black Hills.

526 — The value of type specimens and the importance of their preservation.

Am. Jour. Sci., 4th ser., vol. vi, pp. 401-405; Geol. Mag., dec. iv, vol. v, pp. 548-552, 1898.

527 — The origin of mammals.

Am. Jour. Sci., 4th ser., vol. vi, pp. 406-409; Science, new ser., vol. viii, pp. 953-955, 1898.

528 — The comparative value of different kinds of fossils in determining geological age.

Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 483-486; Geol. Mag., dec. iv, vol. v, pp. 565-568, 1898.

529 **Marsh (O. C.).** On the families of Sauropodous Dinosauria.  
 Am. Jour. Sci., 4th ser., vol. vi, pp. 487-488, 1898.  
 Gives a brief summary of the characters that distinguish the Sauropoda.

530 **Martin (G. C.).** On occurrence of diabase in western Massachusetts.  
 Am. Jour. Sci., 4th ser., vol. vi, pp. 244-248, 1 fig.; Review, Am. Geol., vol. xxii, p. 380 (101.), 1898.  
 Describes the occurrence, field and structural relations, and the petrographic and chemical characters.

531 **Mathews (Edward B.).** An account of the character and distribution of Maryland building stones, together with a history of the quarrying industry.  
 Md. Geol. Surv., vol. ii, pp. 125-241, pls. vii-xxxii, figs. 19, 1898.  
 Describes the occurrence and character of the granites, marbles, limestones, sandstones, and slate used as building materials. Includes a bibliography of the subject and several geologic maps.

532 — The maps and map makers of Maryland.  
 Md. Geol. Surv., vol. ii, pp. 337-488, pls. xliv-xlviii, figs. 27-34, 1898.  
 Describes the various maps that have been made of the State.

533 — The first geological excursion along the Chesapeake, in 1608.  
 Johns Hopkins Univ., Circ., vol. xviii, pp. 14-15, 1898.  
 Gives an account of topographic and geologic work done by Capt. John Smith.

534 — See **Diller (J. S.).** No. 234.

535 **Matthew (George F.).** Studies of Cambrian faunas.  
 Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv, pp. 165-203, 4 pls., 1898.  
 Describes a new subfauna of the Paradoxides beds of the St. John group and Billing's primordial fossils of Vermont and Labrador.

536 — The oldest Paleozoic fauna.  
 Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 301-302 (1 p.);  
 Science, new ser., vol. viii, pp. 503-504 (1 p.); Am. Geol., vol. xxii, p. 262 (1 p.), 1898.

537 — Some characteristic genera of the Cambrian.  
 Brit. Assoc. Adv. Sci., Rept., 1897, pp. 657-658; Review, Geol. Mag., dec. iv, vol. v, pp. 82-83, 1898.  
 Gives a summary of the relations of the various genera.

538 — [Review of "A revision of the Puerto Rican fauna," by W. D. Matthews.]  
 Am. Geol., vol. xxi, pp. 190-191, 1898.

538a — Recent discoveries in the St. John group. No. 2.  
 N. B. Nat. Hist. Soc., Bull. No. 16, pp. 32-43, 1 pl., 1898.  
 Describes general characters of some of the Protolemus fauna and the geologic features of the Kennebecasis Valley.

539 **Maxwell** (Walter). Lavae and soils of the Hawaiian Islands.

Hawaiian Experiment Station, 186 pp., 4 pls. and map; Review, Am. Nat., vol. xxxii, pp. 537-539, 1898.

Describes the lavae, and the character of the soils derived from them. Includes chemical analyses of the various lavae.

540 **Maynard** (George W.). The chromite deposits of Port au Port Bay, Newfoundland.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 283-288, 1898.

Describes the occurrence of chrome ores in this region.

541 **Mead** (J. R.). The drill hole at Wichita [Kansas].

Kan. Acad. Sci., Trans., vol. xv, pp. 20-22, 1898.

Gives the section to a depth of 642 feet.

542 **Medeira** (George). See **Day** (W. C.), No. 227.

543 **Meem** (James C.). [Geology and its relations to topography.]

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 82-83, 1898.

In discussion of paper by John C. Branner on the same subject.

544 **Merivale** (Walter). Occurrences and mining of manjak, in Barbados, West Indies.

North of Eng. Inst., Mg. and Mech. Engrs., Trans., vol. xlvii, Pt. III, pp. 119-127, 1898.

Describes occurrence of bituminous material locally known as manjak.

545 **Merriam** (John C.). The distribution of the Neocene sea urchins of middle California, and its bearing on the classification of the Neocene formations.

Univ. of Cal., Dept. of Geol., Bull., vol. ii, pp. 109-118, 1898.

Discusses the occurrence and relations of species, the character and relations of the San Pablo formation, the classification of the Neocene and the correlation of the auriferous gravels.

546 — [Fossils from the San Pablo formation, California.]

Jour. of Geol., vol. vi, pp. 494-495, 1898.

Gives a list of fossils from Kirker Pass, Contra Costa County.

547 **Merrill** (F. J. H.). A guide to the study of the collections of the New York State Museum.

N. Y. State Mus., Bull., vol. iv, No. 19, pp. 107-262, pls. i-cxix, 1898.

Describes the general principles of geology and gives a brief account of the various geologic subdivisions, and of the economic products occurring in New York.

548 **Merrill** (F. J. H.). The geology of the crystalline rocks of southeastern New York.

N. Y. State Mus., 50th Ann. Rept., vol. i, Appendix A, pp. 21-31, pls. i-v, 1898.

Describes character and occurrence of the crystalline rocks and of the pre-Cambrian, Cambrian, and Silurian strata.

549 **Merrill** (F. J. H.). The origin of the serpentine in the vicinity of New York.

N. Y. State Mus., 50th Ann. Rept., vol. i, Appendix B, pp. 32-44, pls. vi-viii, 1898.

Discusses the origin of serpentine and describes its occurrence in the vicinity of New York. Includes a list of papers consulted

550 —— Road materials and road building in New York.

N. Y. State Mus., 50th Ann. Rept., vol. i, Appendix, pp. 91-131, pls. i-xiv, 1898.

See Bibliography and Index for 1897, No. 427.

551 —— Geology of the vicinity of Greater New York.

Am. Geol., vol. xxi, pp. 72-73 (½ p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

552 **Merrill** (George P.). Rocks, rock-weathering, and soils.

411 pp., Macmillan & Co., New York, 1897.

Review, Jour. of Geol., vol. vi, pp. 208-210, 1898.

553 —— The physical, chemical, and economic properties of building stones.

Md. Geol. Surv., vol. ii, pp. 47-123, pls. iv-vi, figs. 1-18, 1898.

Describes the geologic occurrence, weathering, and methods of testing building stones, with special reference to the Maryland building stones.

554 —— See **Diller** (J. S.), No. 234.

555 **Merriman** (Mansfield). The slate regions of Pennsylvania.

Stone, vol. xvii, pp. 77-90, 5 figs., 1898.

Describes the occurrence and character of slate in Pennsylvania.

556 —— See **Day** (W. C.), No. 227.

557 **Merritt** (William Hamilton). Gold-bearing reefs and placers of northern British Columbia.

Federated Can. Mg. Inst., Jour., vol. iii, pp. 103-112, 4 figs., 1898; Can. Mg. Rev., vol. xvii, pp. 74-78, 4 figs., 1898.

Contains notes on the placers and placer mining of the region.

558 **Merrivak** (Walter). Barbados Manjak.

Eng. and Mg. Jour., vol. lxvi, pp. 790-791, 1898.

Describes the occurrence and character of asphaltum on the island of Barbados in the West Indies.

559 **Mickle** (G. R.). Mineralogical notes on Sudbury anthracite [Ontario].

Can. Inst., Proc., new ser., vol. i, pp. 64-65, 4 figs., 1897.

Describes character and occurrence of a coal-like substance.

560 **Miller** (Arthur M.). The hypothesis of a Cincinnati Silurian island.

Am. Geol., vol. xxii, pp. 78-85, 1898.

Discusses the evidence bearing on the theory of the Cincinnati uplift.

561 **Miller** (Arthur M.). Natural arches of Kentucky.

Science, new ser., vol. vii, pp. 845-846, 1 fig., 1898.

Describes the formation of natural bridges in the eastern Kentucky coal field.

562 **Miller** (Thomas D.). The recently developed oil field of Texas.

Eng. and Mg. Jour., vol. lxv, p. 734, 4 figs., 1898.

Describes occurrence of oil near Corsicana, Texas.

563 **Miller** (Willet G.). On some nickeliferous magnetites.

Brit. Assoc. Adv. Sci., Rept., 1897, pp. 660-661 ( $\frac{1}{2}$  p.), 1898.

Contains brief note on the occurrence in Ontario.

564 — Note on some basic dikes and volcanic rocks of eastern Ontario and Quebec.

Can. Inst., Proc., new ser., vol. i, pp. 85-86, 1897.

Refers to recent literature describing these rocks.

565 — **Goodwin** (W. L.) and. Note on a mineral of the columbite group.

See Goodwin (W. L.) and Miller (W. G.), No. 306.

566 **Minot** (Charles S.). A memento of Prof. Edward D. Cope.

Science, new ser., vol. viii, pp. 113-114, 1898.

Presents a table prepared by Professor Cope, showing his views of the phylogeny of the mammalia.

567 **Moncton** (G. F.). Notes on mining on the coast of British Columbia and the adjacent islands.

Can. Mg. Rev., vol. xvii, pp. 70-72, with map; Federated Can. Mg. Inst., Jour., vol. iii, pp. 96-99, 2 figs., 1898.

Describes the general geologic features and the occurrence of gold.

568 — Notes on the gold-bearing lodes of Cayoosh Creek, British Columbia.

Federated Can. Mg. Inst., Jour., vol. ii, pp. 1-4, 2 figs., 1897.

Describes the occurrence of gold and the geologic structure of the region.

569 **Moore** (Joseph). Account of a morainal stone quarry of Upper Silurian limestone near Richmond [Indiana].

Ind. Acad. Sci., Proc., 1896, pp. 75-76, 4 figs., 1897.

Describes glacial phenomena of the vicinity.

570 — The Randolph mastodon.

Ind. Acad. Sci., Proc., 1896, pp. 277-278, 1 pl., 1897.

Describes remains of a mastodon found in Indiana.

571 **Moses** (Alfred J.). Some new appliances and methods for the study of crystals.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 45-56, 8 figs., 1898.

Describes appliances for studying small detached crystals and crystals in thin sections.

572 **Moses** (Alfred J.) and **Parsons** (Charles Lathrop). Elements of mineralogy, crystallography, and blowpipe analysis. D. Van Nostrand Company, New York, 342 pp., 1897.

## N.

573 **Newberry** (John Strong). New species and a new genus of American Paleozoic fishes, together with notes on the genera *Oracanthus*, *Dactylodus*, *Polyrhizodus*, *Sandalodus*, *Deltodus*. Edited by Bashford Dean.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 282-304, pls. xxii-xxiv, 1898.

Describes material mainly from the Carboniferous of the Mississippi Valley.

573a — The later extinct floras of North America. Edited by Arthur Hollick.

U. S. Geol. Surv., Mon. XXXV, 151 pp., pls. i-lviii, 1898.

574 **Newell** (F. H.). Mesa Verde [Colorado].

Nat. Geog. Mag., vol. ix, pp. 431-434, 1898.

Describes physiographic features in southwestern Colorado.

575 **Newsom** (John F.). A geological section across southern Indiana, from Hanover to Vincennes.

Jour. of Geol., vol. vi, pp. 250-256, pl. xi, 1898; Abstract, Ind. Acad. Sci., Proc., 1897, pp. 250-253, 1897.

Describes the physiographic features of the region and the occurrence of Silurian, Devonian, and Carboniferous strata.

576 — The Knobstone group in the region of New Albany [Indiana].

Ind. Acad. Sci., Proc., 1897, pp. 253-256, with geologic map, 1898.

Describes the character and occurrence of the formation.

577 **Nicolls** (William Jasper). The story of American coals.

J. B. Lippincott Company, Philadelphia, 405 pp., 1897.

578 **Nicholson** (John T.), **Adams** (Frank D.) and. Preliminary notice of some experiments on the flow of rocks.

See Adams (F. D.) and Nicholson (J. T.), No. 6.

579 **Nitze** (Henry B. C.) and **Wilkins** (H. A. J.). Gold mining in North Carolina and adjacent southern Appalachian regions.

N. C. Geol. Surv., Bull., No. 10, 164 pp., pls. i-x, figs. 1-31, 1897.

Describes the geographic distribution and geologic occurrence of the gold belts of the southern Appalachian region, with notes on mining and milling processes.

## O.

580 **Oliphant** (F. H.). Petroleum.

U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 1-166, 1898.

Includes statistics of production, notes on occurrence in Indiana, by W. S. Blatchley, and notes on occurrence in California, Texas, and Wyoming, by W. C. Knight.

581 **Orcutt** (C. R.). Note on the occurrence of tourmalines in California.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 306 (10 l.); Science, new ser., vol. viii, p. 505 (4 p.); Am. Geol., vol. xxii, p. 265 (4 p.), 1898.

582 **Ordonez** (Ezequiel). Les filons argentifères de Pachuca [Mexique].

Soc. Géol. de France, Bull., vol. xxvi, pp. 234-258, 1898.

Describes the physiography of the region, the character and occurrence of the eruptive rocks, the fracture systems, and the origin and occurrence of the metalliferous deposits.

583 **Orton** (Edward). What geology owes to the miner of coal.

Ohio Mining Journal, No. 25, pp. 82-90, 1898.

Gives a sketch of the early history of the science of geology.

584 — Geological probabilities as to petroleum.

Geol. Soc. Am., Bull., vol. ix, pp. 85-100, 1898.

Discusses the origin of petroleum and gas, the evidences of their ascending or descending in geologic formations, the dominant features in their accumulation, and the duration of their supply.

585 **Osborn** (Henry Fairfield). Wasatch and Bridger beds in the Huerfano Lake basin.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 205-206, 1898.

Gives thickness of the Huerfano series and a summary of the conclusions of R. C. Hills regarding their occurrence and character.

585a — The extinct Rhinoceroses.

Am. Mus. Nat. Hist., Mem., vol. i, Pt. III, pp. 79-164, pls. xiia-xx, figs. 1-47, 1898.

Describes the morphology of the skull and teeth and the characters of a series of skulls from the White River beds. Includes a bibliography.

586 — A complete skeleton of *Teleoceras fossiger*. Notes upon the growth and sexual characters of this species.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 51-59, pls. iv-iv a; Science, new ser., vol. 7, pp. 554-557, 1 fig., 1898.

Describes occurrence and character of the material.

587 — A complete skeleton of *Coryphodon radians*. Notes upon locomotion of this animal.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 81-91, pl. x, 2 figs., 1898.

Describes occurrence and characters of the material.

588 — Remounted skeleton of *Phenacodus primævus*. Comparison with *Euprotogonia*.

Am. Mus. Nat. His., Bull., vol. x, pp. 159-164, pl. xii, 4 figs., 1898.

589 — Evolution of the Amblypoda, Part I. *Taligrada* and *Pantodontia*.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 169-218, 29 figs., 1898.

590 — Additional characters of the great herbivorous dinosaur *Camarasaurus*.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 219-233, 13 figs., 1898.

591 **Osborn** (Henry Fairfield). *The origin of the Mammalia.*

Brit. Assoc. Adv. Sci., Rept., 1897, pp. 686-687; Am. Nat., vol. xxxii, pp. 309-334, 14 figs., 1898.

Discusses the relations of the subdivisions of the Mammalia.

592 — *Reconstruction and model of Phenacodus primævus Cope.*

Brit. Assoc. Adv. Sci., Rept., 1897, p. 684 (½ p.), 1898.

Gives a brief account of its relations.

593 — *Origin of the Mammalia.*

Abstract, *Science*, new ser., vol. vii, pp. 176-178, 1898.

Contains summary of paper read before the New York Academy of Sciences.

594 — *A complete skeleton of Coryphodon radians. Notes upon the locomotion of this animal.*

*Science*, new ser., vol. vii, pp. 585-588, 1 fig., 1898.

Describes new material from the Wasatch and Wind River beds, and reviews the literature of the genus.

595 — *Models of extinct vertebrates.*

*Science*, new ser., vol. vii, pp. 841-845, 2 pls., 1898.

596 **Packard** (Alpheus S.). *A half century of evolution, with special reference to the effects of geological changes in animal life.*

Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 311-356; Am. Nat., vol. xxxii, pp. 623-674; *Science*, new ser., vol. viii, pp. 243-257, 285-294, and 316-323, 1898.

597 **Palmer** (C. S.) and **Stoddard** (W. B.). *The dike on the Columbia vein in Ward district, Boulder County, Colorado.*

Colo. Sci. Soc., Proc., vol. v, pp. 159-164, 1 fig., 1898.

Describes the chemical and microscopic characters of the dike rock.

598 **Parker** (Edward W.). *Abrasive materials.*

U. S. Geol. Surv., 19th Ann. Rept., pt. vi (continued), pp. 515-533, 1898.

Includes statistics of production and notes on the occurrence of corundum in Ontario, by Courtenay De Kalb, and on the occurrence of pumicestone in Nebraska, South Dakota, and Utah.

599 — *Fluorspar.*

U. S. Geol. Surv., 19th Ann. Rept., pt. vi (continued), pp. 613-617, 1898.

Includes statistics of production and notes on cryolite deposits of Greenland by H. S. Canby.

600 **Parsons** (Charles Lathrop), **Moses** (Alfred J.), and. *Elements of mineralogy, crystallography and blowpipe analysis.*

See Moses (A. J.) and Parsons (C. L.), No. 572.

601 **Patton** (H. B.). *Spherulites containing chalcedony and opal in Colorado.*

Colo. Sci. Soc., Proc., vol. v, pp. 165-170, 2 pls., 1898.

See Bibliography and Index for 1896, No. 528.

602 **Patton** (H. B.). Peculiar geological formations on the headwaters of the Rio Grande, Colorado.  
Colo. Sci. Soc., Proc., vol. v, pp. 171-172, 2 pls., 1898.  
See Bibliography and Index for 1896, No. 529.

603 —— Tourmaline and tourmaline schists from Belcher Hill, Jefferson County, Colorado.  
Abstracts: Science, new ser., vol. viii, pp. 464-465 (1 p.); Am. Geol. vol. xxii, p. 251 (1 p.), 1898.

604 **Pearce** (Richard). The mode of occurrence of gold in the ores of the Cripple Creek district [Colorado].  
Colo. Sci. Soc., Proc., vol. v, pp. 5-10, 1 pl., 1898.  
See Bibliography and Index for 1896, No. 531.

605 —— Further notes on Cripple Creek ores [Colorado].  
Colo. Sci. Soc., Proc., vol. v, pp. 11-16, 1898.  
See Bibliography and Index for 1896, No. 532.

606 —— Occurrence of tellurium in oxidized form associated with gold.  
Colo. Sci. Soc., Proc., vol. v, pp. 144-147, 1898.  
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607 —— Some notes on the occurrence of uraninite in Colorado.  
Colo. Sci. Soc., Proc., vol. v, pp. 156-158, 1898.  
See Bibliography and Index for 1896, No. 533.

608 —— Notes on the occurrence of a rich silver and gold mineral containing tellurium in the Griffith lode, near Georgetown, Clear Creek County, Colorado.  
Colo. Sci. Soc., Proc., vol. v, pp. 242-243, 1898.  
See Bibliography and Index for 1896, No. 534.

609 —— Notes on the occurrence of tellurium in an oxidized form in Montana.  
Colo. Sci. Soc., Proc., vol. v, pp. 244-245, 1898.  
See Bibliography and Index for 1896, No. 535.

610 —— Note on the occurrence of rhodocrosite in the Original mine, Butte, Montana.  
Colo. Sci. Soc., Bull. No. 1, p. 8, 1898.  
Contains brief description of occurrence and of the associated minerals.

611 —— Notes on the occurrence of selenium with pyrite rich in gold and silver.  
Colo. Sci. Soc., Bull. No. 5, pp. 1-2, 1898.  
Describes material from Mexico and gives the results of an assay.

612 —— Remarks on a gold nugget from Montana.  
Colo. Sci. Soc., Bull. No. 5, pp. 2-3, 1898.  
Describes a specimen from Bear Gulch, Montana, and gives its chemical analysis, showing the presence of tellurium.

613 **Pearce** (Richard). [Telluride ore from Sierra Blanca, Colorado].  
 Colo. Sci. Soc., Bull., No. 6, pp. 4-6, 1898.  
 Gives chemical analyses of the material and remarks on the indications of a new mineral.

614 **Peary** (Robert E.). Northward over the great ice: A narrative of life and work along the shores and upon the interior ice cap of northern Greenland in the years 1886 and 1891-1897.  
 Frederick A. Stokes & Co., New York, 2 vols., 1898. Review by T. C. Chamberlin, Jour. of Geol., vol. vi, pp. 438-441, 1898.

615 **Peckham** (S. F.). The genesis of bitumens, as related to chemical geology.  
 Am. Phil. Soc., Proc., vol. xxxvii, pp. 108-139, 1898.

616 **Penfield** (S. L.). See **Brush** (George J.), No. 114.

617 — [On krennerite from Cripple Creek, Colorado.]  
 See **Chester** (A. H.), No. 150.

618 — On pearcite, a sulpharsenite of silver, and on the crystallization of polybasite.  
 Colo. Sci. Soc., Proc., vol. v, pp. 210-224, 1898.  
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619 — and **Foote** (H. W.). On clinohedrite, a new mineral from Franklin, N. J.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 289-293, 4 figs., 1898.  
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620 **Penhallow** (D. P.). [Review of "On the genus Lepidophloios as illustrated by specimens from the coal formation of Nova Scotia and New Brunswick," by J. W. Dawson.]  
 Am. Nat., vol. xxxii, pp. 464-465, 1898.

621 **Penrose** (R. A. F., jr.). [Geology and its relations to topography.]  
 Am. Soc. Civil Engrs., Trans., vol. xxxix, p. 86 ( $\frac{1}{4}$  p.), 1898.  
 In discussion of paper by John C. Branner on the same subject.

622 — The ore deposits of Cripple Creek [Colorado].  
 Colo. Sci. Soc., Proc., vol. v, pp. 50-53, 1898.  
 See Bibliography and Index for 1896, No. 543.

623 **Perrine** (Charles D.). Earthquakes in California in 1896 and 1897.  
 U. S. Geol. Surv., Bull., No. 155, 47 pp., 1898.

624 **Perry** (J. H.). The physiography of Worcester, Mass.  
 Review by W. M. Davis, Science, new ser., vol. vii, pp. 850-851 ( $\frac{1}{2}$  p.), 1898.

625 **Petre** (R. W.). Mines of La Plata Mountains, Colorado.  
 Eng. and Mg. Jour., vol. lxvi, pp. 667-668, 2 figs., 1898.  
 Describes the general geology of the region and the occurrence of the precious metals.

626 **Phillips** (William B.). The brown ore deposits near Leeds, Alabama.

Eng. and Mg. Jour., vol. lxv, pp. 489-490, 2 figs., 1898.  
Describes the occurrence of the iron ore in this region.

627 — Die Goldlagerstätten in Alabama.

Review by A. Schmidt, Zeit. für prak. Geol., 1898, Heft 7, pp. 253-254, 1898.

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628 **Pilsbry** (Henry A.). Note on the "Florencia formation."

Am. Jour. Sci., 4th ser., vol. v, pp. 232-233, 1898.

Discusses the age of the beds and gives a list of fossils from Iowa City, Iowa.

629 **Pirsson** (L. V.). See **Diller** (J. S.), No. 234.

630 — **Weed** (W. H.) and. Geology and mineral resources of the Judith Mountains of Montana.

See Weed (W. H.) and Pirsson (L. V.), No. 855.

631 **Poole** (Henry S.). The mineralogy of the Carboniferous.

Can. Mg. Rev., vol. xvii, pp. 50-51; Federated Can. Mg. Inst., Jour., vol. iii, pp. 77-81, 1898.

Contains brief notes on the mineral found in the Carboniferous formation of eastern Canada.

632 **Powell** (J. W.). An hypothesis to account for the movement in the crust of the earth.

Jour. of Geol., vol. vi, pp. 1-9, 1898.

633 **Pratt** (J. H.). Mineralogical notes on cyanite, zircon, and anorthite from North Carolina.

Am. Jour. Sci., 4th ser., vol. v, pp. 126-128, 2 figs., 1898.

Describes the crystallographic characters of the material.

634 — Mineralogical notes on anthophyllite, enstatite, and beryl (emerald) from North Carolina.

Am. Jour. Sci., 4th ser., vol. v, pp. 429-432, 1898; Abstract, Am. Geol., vol. xxii, p. 377 (61.), 1898.

Describes their occurrence and crystallographic and chemical characters.

635 — On the origin of the corundum associated with the peridotites in North Carolina.

Am. Jour. Sci., 4th ser., vol. vi, pp. 49-65, figs. 1-8, 1898; Review, Am. Geol., vol. xxii, pp. 377-378 (½ p.), 1898.

Reviews the literature on the subject and discusses the origin and relations of corundum. Includes two geologic sketch maps.

636 — The occurrence, origin, and chemical composition of chromite.

Abstract, Eng. and Mg. Jour., vol. lxvi, p. 696 (½ p.), 1898.

Describes occurrence in the Appalachian region.

637 **Pratt** (J. H.), **Hidden** (W. E.) and. On rhodolite, a new variety of garnet.  
See **Hidden** (W. E.) and **Pratt** (J. H.), No. 348.

637a — — — Twinned crystals of zircon from North Carolina.  
See **Hidden** (W. E.) and **Pratt** (J. H.), No. 349.

638 — — — On the associated minerals of rhodolite.  
See **Hidden** (W. E.) and **Pratt** (J. H.), No. 350.

639 **Preston** (H. L.). On iron meteorites, as nodular structures in stony meteorites.  
Am. Jour. Sci., 4th ser., vol. v, pp. 62-64, 1898.  
Describes the characters of certain meteorites and the occurrence of siderite in stony matter.

640 — — San Angelo meteorite.  
Am. Jour. Sci., 4th ser., vol. v, pp. 269-272, 4 figs., 1898.  
Describes the characters of the meteorite from Texas and gives a chemical analysis.

641 **Price** (J. A.). Notes on Indiana geology.  
Ind. Acad. Sci., Proc. 1897, pp. 262-266, with geologic map and sections, 1898.  
Describes the character and relations of the Knobstone group along a portion of White River.

642 **Prosser** (Charles S.). The classification and distribution of the Hamilton and Chemung series of central and eastern New York. Part I.  
N. Y. 15th Ann. Rept. State Geologist, vol. i, pp. 12-13, 87-222, pls. i-xiii, 16 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 87-222, pls. i-xiii, 16 figs., 1898.  
Describes the classification and stratigraphic and faunal characters of the series. Accompanied by geologic map.

643 — and **Cumings** (Edgar R.). Sections and thickness of the Lower Silurian formations on West Canada Creek and in the Mohawk Valley [New York].  
N. Y. 15th Ann. Rept. State Geologist, vol. i, pp. 23-24, 615-659, pls. i-xii, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 615-659, pls. i-xii, 1898.  
Describes the stratigraphic relations and lithologic and faunal characters of the Lower Silurian formations of the region.

644 **Purington** (Chester Wells). Preliminary report on the mining industries of the Telluride quadrangle, Colorado.  
U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 751-848, pls. ciii-cviii, figs. 66-74, 1898.  
Gives a general description of the sedimentary and igneous rocks, the fissures and vein systems, and the occurrence of the silver and gold ores. Discusses the origin and age of the ore deposits.

## Q.

645 **Quereau** (Edmund Chase). Topography and history of Jamesville Lake, New York.

Geol. Soc. Am., Bull., vol. ix, pp. 173-182, pls. 12-14; Abstract, Science, new ser., vol. vii, pp. 50-51 ( $\frac{1}{2}$  p.), 1898; Review by W. M. Davis, Science, new ser., vol. vii, pp. 489-490, 1898.

Describes the general features of the region, the origin of this and similar lakes, and the peculiar features of the Jamesville Gorge.

646 **Quimby** (George E.). [Tripoli deposits of Newton County, Missouri.]

The Mineral Industry, 1897, p. 17, 1898.

Describes the character of the deposits.

## R.

647 **Rand** (Theodore D.). The Birdsboro trap quarries.

Phil. Acad. Nat. Sci., Proc. 1898, p. 10, 1898.

Gives a brief description of the trap rock.

648 **Ransome** (F. Leslie). Some lava flows of the western slope of the Sierra Nevada, California.

U. S. Geol. Surv., Bull. 89, 74 pp., pls. i-xi, 1898; Abstract, Am. Jour. Sci., 4th ser., vol. v, pp. 355-375, figs. 1-2; Review, Am. Nat., vol. xxxii, p. 614, 1898.

Describes the physiography of the region, the occurrence, distribution, and chemical and petrographic characters of the latites, and discusses the classification of the rocks and the bearing of the lava flows on the evidence of orogenic movements.

649 **Reid** (Harry Fielding). The variations of glaciers. III.

Jour. of Geol., vol. vi, pp. 473-476, 1898.

Gives a summary of the report of the international committee on glaciers, showing the movements of existing glaciers.

650 —— The stratification of glaciers.

Abstracts, Science, new ser., vol. viii, p. 463 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 249 (8 l.), 1898.

651 —— Notes on living and extinct species of North American Bovidæ.

Phil. Acad. Nat. Sci., Proc. 1897, pp. 483-502, pl. xii, 1898.

652 **Rhoads** (Samuel N.). Notes on the fossil walrus of eastern North America.

Phil. Acad. Nat. Sci., Proc. 1898, pp. 196-201, 1898.

Reviews the literature and describes some of the characters of the fossil walrus.

653 **Rice** (William North). A suggestion in regard to the theory of volcanoes.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 199-200, 1898.

654 —— [Review of "Volcanoes of North America: A reading lesson for students of geography and geology," by Israel C. Russell.]

Science, new ser., vol. vii, pp. 34-36, 1898.

655 **Richardson** (C. H.). The Washington limestone in Vermont.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 295-296; Science, new ser., vol. viii, pp. 469-470 ( $\frac{1}{4}$  p.); Am. Geol., vol. xxii, pp. 257-258 ( $\frac{1}{4}$  p.), 1898.

Describes the occurrence, relations, and chemical character of the limestone strata.

656 **Rickard** (T. A.). Vein structure in the Enterprise mine [Colorado].

Colo. Sci. Soc., Proc., vol. v, pp. 123-130, 6 pls., 1898.

Describes the vein phenomena in this mine.

657 —— The minerals which accompany gold and their bearing upon the richness of the ore deposits.

Mg. and Sci. Press, vol. lxxvii, pp. 81-82 and 105-106, 1898.

658 **Ries** (Heinrich). Geology of Orange County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 18-19, 393-476, pls. i-xl, 26 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 393-476, pls. i-xl, 26 figs., 1898.

Describes the physiography, the character, and occurrence of the pre-Cambrian, Cambrian, Silurian, Devonian, and Pleistocene rocks, and of the dike rocks, and the occurrence of road material, clays, building stones, and iron ores.

659 —— Physical tests of the Devonian shales of New York State to determine their value for the manufacture of clay products.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 673-698, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 673-698, 1898.

Describes the general properties of shales and the character and occurrence of the shale-bearing divisions of the Silurian and Devonian systems of New York.

660 —— The clay-working industry of the United States in 1897.

U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 469-486, 1898.

Includes statistics of production, analyses of clays, and general notes on the geologic occurrence of clays.

661 —— Clay deposits and clay industry in North Carolina. A preliminary report.

N. C. Geol. Surv., Bull. No. 13, 157 pp., pls. i-vii, figs. 1-5, 1897; Reviews, Jour. of Geol., vol. vi, pp. 545-547; Am. Geol., vol. xxii, p. 382 ( $\frac{1}{2}$  p.), 1898.

Describes the origin, chemical and physical characters of clay, and the occurrence and character of the clays of North Carolina. Includes a bibliography.

662 —— The fuller's earth of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 333-335, 1898.

Describes its occurrence in the Black Hills.

663 —— The clays and clay industry of Colorado.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 336-340, 1898.

Describes its occurrence, character, and chemical composition.

664 —— Allanite crystals from Mineville, Essex County, New York.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 327-329, 2 figs., 1898.

Describes their occurrence and crystallographic characters.

665 **Ries** (Heinrich). Note on a beryl crystal from New York City.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 329-330, 1 fig., 1898.

Describes occurrence and crystallography.

666 — Physical tests of New York shales.

School of Mines Quart., vol. xix, pp. 192-194, 1898.

Describes the characters of the shales and gives a summary of the physical tests.

667 — Clay industries of New York.

N. Y. State Mus., 48th Ann. Rept., vol. i, Appendix, pp. 97-262, 3 pls., 24 figs. and map, 1898.

See Bibliography and Index for 1895, No. 398.

668 **Riggs** (E. S.). On the skull of *Amphictis*.

Am. Jour. Sci., 4th ser., vol. v, pp. 257-259, 2 figs., 1898.

Describes material in the collections at Princeton University.

669 **Roberts-Austin** (Professor). Canada's metals.

Macmillan & Co., limited, London, 46 pp., 13 figs., 1898.

Describes the mineral resources of Canada.

670 **Roy** (Andrew). Geology of the Jackson County coal in Ohio.

Abstract, Eng. and Mg. Jour., vol. lxv, p. 164, 1898.

Describes the occurrence of coal in this county.

671 **Ruedemann** (R.). Development and mode of growth of *Diplograptus McCoy*.

N. Y., 14th Ann. Rept. State Geologist, pp. 219-249, 5 pls.; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 219-249, 5 pls. Review by Stuart Weller, Jour. of Geol., vol. vi, p. 206, 1898.

672 — The discovery of a sessile Conularia.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 24, 699-728, pls. i-iv, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 699-728, pls. i-iv, 1898.

673 — Additional note on the oceanic current in the Utica epoch.

Am. Geol., vol. xxi, pp. 75-81, figs. 1-2, 1898.

Discusses the evidences of Ordovician strata overlying the Adirondack crystalline area.

674 — On the development of *Tetradium cellulosum* Hall sp.

Am. Geol., vol. xxii, pp. 16-25, pl. v, 1898.

Reviews the literature on the genus and describes material from the Trenton limestone of New York.

675 — Synopsis of recent progress in the study of graptolites.

Am. Nat., vol. xxxii, pp. 1-16, 28 figs., 1898.

Reviews recent work on graptolites and gives a bibliography.

676 **Russell** (Israel Cook). Glaciers of Mount Rainier, with a paper on the rocks of Mount Rainier, by George Otis Smith.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 355-423, pls. lxxv-lxxxii, 1898.

Describes the physical features of the State of Washington and the glaciers and glacial phenomena of the region.

677 **Russell** (Israel Cook). The great terrace of the Columbia and other topographic features in the neighborhood of Lake Chelan, Washington.

Am. Geol., vol. xxii, pp. 362-369, 1898.

Describes the occurrence of the terrace and other glacial features of the region.

678 —— Topographic features due to landslides.

Pop. Sci. Mo., vol. liii, pp. 480-489, 3 figs., 1898.

Describes some physiographic features of eastern Washington and Oregon.

679 —— Geography of the Laurentian basin.

Am. Geog. Soc., Bull., vol. xxx, pp. 226-254, 6 figs., 1898.

Includes a discussion of the glacial history of the region.

680 **Rutherford** (John). Notes on the albertite of New Brunswick.

Can. Mg. Rev., vol. xvii., pp. 19-22, 2 figs.; Federated Can. Mg. Inst. Jour., vol. iii, pp. 40-46, 1 fig., 1898.

Describes occurrence and origin in the Albert Mines.

## S.

681 **Salisbury** (Rollin D.). The physical geography of New Jersey.

N. J. Geol. Surv., Final Rept., vol. iv., 170 pp., 16 pls., 37 figs; Review by W. M. Davis, Science, new ser., vol. vii, pp. 765-766, 1898.

Describes the topographic features of the State and the process of their development.

682 —— Surface geology. Report of progress [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1897, pp. 1-22, pl. i, 1898.

Includes notes on the Paleozoic, Jura-Trias, Cretaceous, Tertiary, and Pleistocene formations, and a geologic map of the State.

683 —— [Review of "The Newark System or Red Sandstone belt," by Henry B. Kümmel.]

Jour. of Geol., vol. vi, pp. 659-661, 1898.

684 —— [Review of "The geological history of the Isthmus of Panama and portions of Costa Rica," by R. T. Hill].

Jour. of Geol., vol. vi, pp. 661-668, 1898.

685 **Sardeson** (F. W.). The so-called Cretaceous deposits in southeastern Minnesota.

Jour. of Geol., vol. vi, pp. 679-691, 1898.

Discusses the evidences of the existence of Cretaceous deposits *in situ* and the probability of their having been transported by the glacier in this region.

686 —— Interformational conglomerates in the Galena series.

Am. Geol., vol. xxii, pp. 315-323, pl. ix, 1898.

Describes the lithologic succession of the series in Minnesota.

687 —— Remarks on the loess.

Abstract, Iowa Acad. Sci. Proc., vol. v, pp. 11-12, 1898.

Discusses the limitation of the name to aeolian deposits.

688 **Schmidt** (A.). [Review of "Die Goldlagerstätten in Alabama," by William B. Phillips].  
Zeit. für prak. Geol., 1898, heft 7, pp. 253-254, 1898.

689 **Schneider** (Philip F.). The limestones of central New York.  
Stone, vol. xviii, pp. 26-29, 1898.  
Describes the character and occurrence of limestones from the several geologic formations of the region.

690 **Schuchert** (Charles), **White** (David) and. Cretaceous series of the west coast of Greenland.  
See White (D.) and Schuchert (C.) No. 872.

691 **Scott** (William B.). Memoir of Edward D. Cope.  
Geol. Soc. Am., Bull., vol. ix, pp. 401-408, 1898.  
Gives a sketch of the scientific work of Professor Cope.

692 — Preliminary note on the selenodont artiodactyls of the Uinta formation.  
Am. Phil. Soc., Proc., vol. xxxvii, pp. 73-81, 1898.  
Describes new genera and species.

693 **Scupham** (J. R.). The buried river of California as a source of gold.  
Mines and Minerals, vol. xix, pp. 150-152, 1 fig., 1898.  
Describes former drainage systems and the occurrence of placer gold.

694 **Seward** (A. C.). Fossil plants for students of botany and geology.  
Vol. I.  
University Press, Cambridge, England, 450 pp.; Review by Henry C. Cowles, Jour. of Geol., vol. vi, pp. 436-438; Bot. Gazette, vol. xxvi, pp. 59-61, 1898.

695 **Shaler** (N. S.). Geology of the Cape Cod district [Massachusetts].  
U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 503-593, pls. xvii-civ, figs. 86-92, 1898.  
Describes the general relations of the sedimentary series, under-structure, Glacial deposits and history, and other features of the Cape Cod region.

696 **Shattuck** (George Burbank). Two excursions with geological students into the coastal plain of Maryland.  
Johns Hopkins Univ., Cire., vol. xviii, pp. 15-16, 1898.  
Describes Cretaceous and Tertiary sections in eastern Maryland.

697 — See **Clark** (W. B.), No. 152.

698 **Shephard** (Edward M.). A report upon Greene County [Missouri].  
Mo. Geol. Surv., vol. xii, Pt. I, pp. 15-245, 5 pls., 1 fig., and geologic map, 1898.  
Describes the physiographic features, the character, occurrence, and relations of the subdivisions of the Carboniferous, Devonian, and Silurian formations, the geologic structure and the occurrence of the economic products of the region.

699 **Sherzer** (W. H.). Limestones of southeastern Michigan, with their associated sandstone, salt, and gypsum.  
 Abstract, Geol. Soc. Am., Bull., vol. ix, pp. 10-11, 1898.  
 Describes the occurrence of Silurian and Devonian strata of the region.

700 **Shimek** (B.). Is the loess of aqueous origin?  
 Iowa Acad. Sci., Proc., vol. v, pp. 32-45, 1898.  
 Describes the fauna and its bearing on the origin of the loess. Gives a list of loess molluscan fossils.

701 **Siebenthal** (C. E.). The Bedford oolitic limestone [Indiana].  
 U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 292-296, 1898.  
 Describes its character and occurrence in Indiana.

702 **Simpson** (George B.). A handbook of the genera of the North American Paleozoic Bryozoa. With an introduction upon the structure of living species.  
 N. Y., 14th Ann. Rept. State Geologist, pp. 407-608, 30 pls., 222 figs., 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 407-608, 30 pls., 222 figs., 1897.

703 **Sjögren** (Ahe). Notes on the eastern section of Costa Rica.  
 Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, pp. 281-282, 1898.  
 Includes brief notes on the stratigraphy of the region.

704 **Slichter** (Charles S.). Note on the pressure within the earth.  
 Jour. of Geol., vol. vi, pp. 65-78, 3 figs., 1898.  
 Discusses the magnitude of the pressure within the earth as influenced by changes in the ellipticity of the earth's figure.

705 **Smith** (E. A.). Alabama gold mining notes.  
 Mines and Minerals, vol. xix, p. 129 (½ p.), 1898.  
 Contains brief notes on the gold fields of Alabama.

706 — The clay resources of Alabama and the industries dependent upon them.  
 Eng. and Mg. Jour., vol. lxvi, p. 369, 1898.  
 Describes the chemical and physical characteristics and occurrence of Alabama clays.

707 — The stone industry of Alabama.  
 Eng. and Mg. Jour., vol. lxvi, p. 398, 1898.  
 Describes the occurrence and distribution of building stones in Alabama.

708 **Smith** (Frank Clemens). The Potsdam gold ores of the Black Hills of South Dakota.  
 Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 404-428, 1898.  
 Describes the occurrence, character, and origin of the so-called Potsdam siliceous gold and silver ores.

709 **Smith** (George Otis). The rocks of Mount Rainier [Washington].  
 U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 416-423, 1898.  
 Describes the relations and characters of the granite and volcanic rocks of the region.

710 — Igneous phenomena in the Tintic Mountains, Utah.  
 Science, new ser., vol. vii, p. 502 ( $\frac{1}{2}$  p.), 1898.  
 Contains summary of paper read before the Geological Society of Washington.

711 — See **Diller** (J. S.), No. 234.

712 **Smith** (James Perrin). Geographic relations of the Trias of California.  
 Jour. of Geol., vol. vi, pp. 776-786, 1898.  
 Reviews the literature, gives a table showing the correlation of marine Triassic sediments, and discusses the faunal and stratigraphic features of the Trias of California.

713 — The development of Lytoceras and Phylloceras.  
 Cal. Acad. Sci., Proc., 3d ser., Geology, vol. i, pp. 129-152, pls. xvi-xx, 1898.  
 Discusses the nomenclature and law of acceleration of development, and describes material from the Horsetown beds of the Cretaceous.

714 **Smith** (William Sidney Tangier). A geological sketch of San Clemente Island [California].  
 U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 465-496, pls. lxxxiv-xcvi, figs. 82-85, 1898.  
 Describes the topography and the character of the eruptive rocks and Tertiary deposits of the island.

715 **Smock** (John C.). Administrative report [New Jersey Geological Survey].  
 N. J. Geol. Surv., Ann. Rept. for 1897, pp. xiii-xl, 1898.  
 Gives a summary of work done on the Pleistocene, Cretaceous, Jura-Trias, and Archean formations of the State.

716 **Smyth** (B. B.). The closing of Michigan glacial lakes.  
 Kan. Acad. Sci., Trans., vol. xv, pp. 23-27, 1898.  
 Describes the process of filling up small lakes in central Michigan.

717 — The buried moraines of the Shunganunga [Kansas].  
 Kan. Acad. Sci., Trans., vol. xv, pp. 95-104, with map, 1898.  
 Describes the general features of the ice invasion of the region.

718 **Smyth** [C. H., jr.]. Report on the crystalline rocks of St. Lawrence County [New York].  
 N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 20-21 and 477-497, 1897. N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 477-497, 1898.  
 Describes the character and occurrence of the crystalline limestones and origin and relations of the gneisses.

719 **Smyth** [C. H., jr.]. Report on the talc industry of St. Lawrence County [New York].  
 N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 20 and 661-671, 1897;  
 N. Y. State Mus. 49th Ann. Rept., vol. ii, pp. 661-671, 1898.  
 Describes occurrence and characteristics of talc in this county.

720 — Weathering of alnoite in Manheim, New York.  
 Geol. Soc. Am., Bull., vol. ix, pp. 257-268, pl. 18; Reviews: Am. Geol., vol. xxii, pp. 382-383 ( $\frac{1}{2}$  p.); Am. Nat., vol. xxxii, p. 535 ( $\frac{2}{3}$  p.), 1898.  
 Abstract, Jour. of Geol., vol. vi, pp. 331-332, 1898.  
 Describes occurrence and petrographic and chemical characters of the rock.

721 — The New York talc industry in 1897.  
 The Mineral Industry, 1897, pp. 630-631, 1898.  
 Includes brief notes on the occurrence of talc.

722 **Spaulding** (M. B.). The Silver Pick mine, Wilson [Colorado].  
 School of Mines Quart., vol. xx, pp. 41-47, 1898.  
 Describes the general geologic features of Mt. Wilson and the occurrence of the gold ores.

723 **Spencer** (Arthur Coe). The geology of Massanutten Mountain in Virginia.  
 Published by the author, Washington, D. C., 54 pp., 3 pls., 1 fig., 1897;  
 Review by H. S. Williams, Am. Jour. Sci., 4th ser., vol. v, pp. 231-232 ( $\frac{1}{2}$  p.); Review by C. R. Keyes, Am. Geol., vol. xxi, pp. 191-192, 1898.  
 Describes the occurrence and character of the Silurian and Devonian formations, the geologic structure, physiographic features, and geologic history of the region.

724 — The Upper Cretaceous section in southwestern Colorado.  
 Abstract, Science, new ser., vol. vii, p. 143 ( $\frac{1}{2}$  p.), 1898.  
 Contains summary of paper read before the Geological Society of Washington.

725 — and **Girty** (G. H.). The Devonian in southwestern Colorado.  
 Science, new ser., vol. vii, p. 810 ( $\frac{1}{2}$  p.), 1898.  
 Contains summary of paper read before the Geological Society of Washington.

726 **Spencer** (J. W.). Great changes of level in Mexico and the inter-oceanic connections.  
 Geol. Soc. Am., Bull., vol. ix, pp. 13-34, pls. 1-5, figs. 1-6; Review by W. M. Davis, Science, new ser., vol. vii, p. 203 ( $\frac{1}{2}$  p.), 1898.  
 Describes the physical features of Mexico, the occurrence and character of the Lafayette, Columbia, and Coatzacoalcos formations and the evidence of recent changes of level.

727 — Another episode in the history of Niagara River.  
 Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 299 ( $\frac{2}{3}$  p.); Science, new ser., vol. viii, pp. 501-502 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, pp. 259-260 ( $\frac{1}{2}$  p.), 1898.

728 **Spencer** (J. W.) Evidence of recent great elevation of New England.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 301 (12 l.); Science, new ser., vol. viii, p. 500 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 262 ( $\frac{1}{2}$  p.), 1898.

729 —— Niagara as a timepiece.

Can. Inst., Proc., new ser., vol. i, pp. 101-103, 1898.

Discusses the geologic history of the Niagara River.

730 —— Late formations and great changes of level in Jamaica.

Can. Inst., Trans., vol. v, pp. 325-357, pls. i-vi, figs. 1-7, 1898; Review by W. M. Davis, Science, new ser., vol. vii, p. 851 ( $\frac{1}{2}$  p.); Geol. Mag., dec. iv, vol. v, pp. 515-517; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 270-272, 1898.

Describes the topographic, hydrographic, and stratigraphic features of the region and its geologic history during Tertiary, Pleistocene, and Recent periods. Discusses the correlation of the formations.

731 —— Resemblance between the declivities of high plateau and those of submarine Antillean valleys.

Can. Inst., Trans., vol. v, pp. 359-368, figs. 1-6 and map; Review, Geol. Mag., dec. iv, vol. v, pp. 514-515; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 272-273, 1898.

Describes valleys in the United States and compares them with submarine valleys.

732 —— Another episode in the history of Niagara Falls.

Am. Jour. Sci., 4th ser., vol. vi, pp. 439-450, 2 figs., 1898.

Describes recent observations on the geologic history of the Niagara River.

733 —— An account of the researches relating to the Great Lakes.

Am. Geol., vol. xxi, pp. 110-123, 1898.

Reviews the principal results of investigations of the geologic history of the Great Lakes.

734 —— On Mr. Frank Leverett's "Correlation of moraines with beaches on the border of Lake Erie."

Am. Geol., vol. xxi, pp. 393-396, fig. 1, 1898.

Discusses the theory of Glacial dams.

735 —— On the continental elevation of the Glacial epoch.

Brit. Assoc. Adv. Sci., Rept., 1897, pp. 651-652, Geol. Mag., dec. iv, vol. v, pp. 32-38, 1898.

Discusses the evidence of such elevation.

736 —— The West Indian bridge between North and South America.

Pop. Sci. Mo., vol. liii, pp. 10-30, 4 pls., 9 figs., 1898.

Discusses the character of land valleys, submarine plateaus, and drowned valleys, and the evidences of a connection between the Atlantic and Pacific oceans.

737 **Spencer** (J. W.). Geological waterways across Central America.  
 Pop. Sci. Mo., vol. liii, pp. 577-593, 9 figs., 1898.  
 Describes the physiography of the region and discusses the evidences of former oceanic connections.

738 **Spencer** (L. J.). Diaphorite from Montana and Mexico.  
 Am. Jour. Sci., 4th ser., vol. vi, p. 316, 1898.  
 Describes crystallographic characters of the material. Discusses relations with brongniardite.

739 **Spurr** (Josiah Edward). Geology of the Yukon gold district, Alaska, with an introductory chapter on the history and condition of the district to 1897, by Harold Beach Goodrich.  
 U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 101-392, pls. xxxii-li, figs. 7-25, 1898.  
 Describes the occurrence, character, and distribution of the sedimentary and igneous rocks and of the auriferous veins and placer deposits of the region. Discusses the evidences of movement in the earth's crust. Includes a report by F. H. Knowlton on the fossil plants collected, and a chapter on recent warpings of the region, by H. B. Goodrich.

739a — Geology of the Aspen mining district, Colorado, with atlas.  
 U. S. Geol. Surv., Mon. XXXI, 260 pp., pls. i-xliii, figs. 1-11, atlas sheets i-xxx, 1898.  
 Describes the character and occurrence of the Cambrian, Silurian, Carboniferous, Jura-Trias, and Cretaceous sediments and the igneous rocks of the region. Includes description of the mines, a discussion of the character of the ores and ore deposition, and a discussion of fault phenomena.

740 **Squier** (G. H.). Studies in the driftless region of Wisconsin, II.  
 Jour. of Geol., vol. vi, pp. 182-192, figs. 3-7, 1898.  
 Describes occurrence and formation of beds of nonglacial origin. See Bibliography and Index for 1897, No. 577, for notice of first paper.

741 **Stanton** (Timothy W.). Memoir of Joseph Francis James.  
 Geol. Soc. Am., Bull., vol. ix, pp. 408-411, 1898.  
 Gives a sketch of the life and scientific work of Professor James and includes a list of his published papers.

742 — The Mesozoic section of Sierra Blanca, Texas.  
 Science, new ser., vol. vii, p. 429 ( $\frac{1}{4}$  p.), 1898.  
 Contains summary of paper read before the Geological Society of Washington.

743 **Stevenson** (John J.). Notes on the geology of the Bermudas.  
 N. Y. Acad. Sci., Trans., vol. xvi., pp. 96-124, pls. viii-x, 1898.  
 Describes the materials forming the surface of the islands and the relations of the land and submerged area. Discusses the literature on the geologic history of the Bermudas.

744 — [Geology and its relations to topography.]  
 Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 88-90, 1898.  
 In discussion of paper by John C. Branner on the same subject.

745 **Stewart** (Alban). A contribution to the knowledge of the Ichthyic fauna of the Kansas Cretaceous.  
 Kan. Univ. Quart., vol. vii, pp. 21-29, pls. i-ii, 1898.  
 Describes a number of new species.

746 — Individual variations in the genus *Xiphactinus* Leidy.  
 Kan. Univ. Quart., vol. vii, pp. 115-119, pls. vii-x, 1898.  
 Describes material in the Kansas University museum.

747 — Some notes on the genus *Saurodon* and allied species.  
 Kan. Univ. Quart., vol. vii, pp. 177-186, pls. xiv-xvi, 1898.  
 Reviews the literature on *Saurocephalus* and *Saurodon* and describes two new species of *Saurodon*.

748 — A preliminary description of seven new species of fish from the Cretaceous of Kansas.  
 Kan. Univ. Quart., vol. vii, pp. 191-196, 2 figs., 1898.

749 **Stoddard** (W. B.), **Palmer** (C. S.) and. The dike on the Columbia vein in Ward district, Boulder County, Colorado.  
 See Palmer (C. S.) and Stoddard (W. B.), No. 597.

750 **Stone** (A. M.). Corundum mining in North Carolina.  
 Eng. and Mg. Jour., vol. lxv, p. 490 ( $\frac{1}{2}$  p.), 1898.  
 Gives brief notes on the occurrence of corundum.

751 **Stone** (George H.). The granitic breccia of the Cripple Creek region [Colorado].  
 Am. Jour. Sci., 4th ser., vol. v, pp. 21-32, 1898.  
 Describes the occurrence of a number of dikes, and the character and relations of the associated granites and schists. Discusses the lacustral theory of the origin of certain deposits.

752 **Storms** (W. H.). Gold formations in California.  
 Mg. and Sci. Press, vol. lxxvi, pp. 110-111, 1898.  
 Discusses the formation of fissure systems and the occurrence of gold veins and auriferous gravels in California.

**T.**

753 **Taff** (Joseph A.). Geology of the McAlister quadrangle [Indian Territory].  
 Science, new ser., vol. vii, p. 612 ( $\frac{1}{2}$  p.), 1898.  
 Contains summary of paper read before the Geological Society of Washington.

754 **Tarr** (R. S.). The peneplain.  
 Am. Geol., vol. xxi, pp. 351-370, 1898.  
 Discusses the evidence regarding the theory of the peneplain.

755 — Wave-formed cuspatc forelands.  
 Am. Geol., vol. xxii, pp. 1-12, pls. i-iv, 1898.  
 Describes the character of the materials and mode of formation of cuspatc forelands.

756 **Tarr** (R. S.). The physical geography of New York State.

Am. Geog. Soc., Bull., vol. xxviii, pp. 102-129, 3 maps, 1896; vol. xxix, pp. 16-40, 19 figs., 1897; Review by W. M. Davis, Science, new ser., vol. vii, pp. 124-125 ( $\frac{1}{2}$  p.), 1898.

Describes the general physiographic and drainage features and geologic development of the State.

## 757 — The physical geography of New York State.

Am. Geog. Soc., Bull., vol. xxx, pp. 28-56, 20 figs., pp. 183-225, 30 figs., pp. 375-407, 19 figs., 1898.

Describes the plains and plateaus and the influence of the Glacial period upon the topography and drainage systems of the State.

758 **Tatham** (William). Gold mining in Georgia.

Franklin Inst., Jour., vol. cxlvii, pp. 19-26, 1898.

Describes the occurrence of gold in central Georgia.

759 **Taylor** (Frank Bursley). The Champlain submergence and uplift and their relations to the Great Lakes and Niagara Falls.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 652-653, 1898.

Discusses the evidences of the abandoned beaches.

## 760 — Origin of the gorge of the whirlpool rapids at Niagara.

Geol. Soc. Am., Bull., vol. ix, pp. 59-84, figs. 1-2; Review by W. M. Davis, Science, new ser., vol. vii, p. 627 ( $\frac{1}{2}$  p.), 1898.

Describes the character of the gorges and discusses the various interpretations of the phenomena and of their correlation.

## 761 — Some features of the recent geology around Detroit [Michigan].

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 201-202, 1898.

Discusses drainage features of the region.

## 762 — Notes on the moraines of the Georgian Bay lobe of the ice-sheet.

Abstract, Science, new ser., vol. vii, p. 51 ( $\frac{2}{3}$  p.), 1898.

763 **Teall** (J. J. H.). Differentiation in igneous magmas as a result of progressive crystallization.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 661-662, 1898.

Describes certain basalts and their bearing on the theory of differentiation of igneous magmas.

764 **Thompson** (A. H.). Robert Hay.

Kan. Acad. Sci., Trans., vol. xv, pp. 131-134, 1898.

Gives a sketch of his life and character and a list of his publications.

765 **Tight** (William G.). The development of the Ohio River.

Abstracts, Science, new ser., vol. viii, pp. 465-466 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 252 ( $\frac{1}{2}$  p.), 1898.

766 **Tilton** (J. L.) and **Bain** (H. F.). Geology of Madison County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 491-539, pls. x-xi, figs. 72-79, with geologic map, 1897. \*

Describes the physiographic features, the occurrence and character of the Carboniferous and Pleistocene formations, and the occurrence of building stone, road material, and coal.

767 **Todd** (James E.). A revision of the moraines of Minnesota.

Am. Jour. Sci., 4th ser., vol. vi, pp. 469-477, with map, 1898.

Reviews the work of Warren Upnam on the glacial features of Minnesota.

768 — Degradation of the loess.

Iowa Acad. Sci., Proc., vol. v, pp. 46-51, 1898.

Discusses different theories of the origin of the loess, and describes the character and process of its degradation.

769 — Section along Rapid Creek from Rapid City westward [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 27-40, pls. ii-v, 1898.

Describes the Algonkian, Cambrian, Carboniferous, Juratrias, and Cretaceous rocks of the section in the eastern part of the Black Hills. Includes brief notes on the economic products.

770 — A reconnaissance into northwestern South Dakota.

S. D. Geol. Surv., Bull. No. 2, pp. 43-68, pls. i, v-x, 1898.

Describes the physiographic features and the occurrence and character of the Cretaceous and Tertiary rocks of the region. Includes brief notes on the economic products.

771 — The geology along the Burlington and Missouri Railway [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 69-82, 1898.

Includes general notes on the geology of the eastern portion of the Black Hills.

772 — Additional notes on the limits of the main artesian basin [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 88-115, pl. xi, 1898.

Includes sections of well borings in various parts of the artesian basin.

773 — The exploration of the White River bad lands in 1896 [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 117-135, pls. xii-xv, 1898.

Describes the Cretaceous, Tertiary, and Pleistocene strata of the region and gives notes on the character of the economic products.

774 — The clay and stone resources of South Dakota.

Eng. and Mg. Jour., vol. lxvi, p. 371 (½ p.), 1898.

Describes briefly the occurrence of clay and building stones.

775 — Is the loess of either lacustrine or semilacustrine origin?

Science, new ser., vol. v, pp. 993-994, 1897.

See Bibliography and Index for 1897, No. 611.

776 **Turner** (Henry W.). Bidwell Bar folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 43; Review, Jour. of Geol., vol. vi, pp. 542-544, 1898.

Describes the physiographic features and the character and occurrence of the Paleozoic, Tertiary, and Pleistocene rocks and of the gold gravels and quartz veins. Includes a description of the gold belt of California and geologic and topographic maps.

777 **Turner** (Henry W.). Notes on some igneous, metamorphic, and sedimentary rocks of the coast ranges of California.

Jour. of Geol., vol. vi, pp. 483-499, pl. xiii, 1898; Reviews, Am. Geol., vol. xxii, pp. 381-382 ( $\frac{1}{2}$  p.); Am. Nat., vol. xxxii, p. 967 ( $\frac{1}{2}$  p.), 1898.

Describes the occurrence and chemical characters of metabasalt, diabase, and serpentine, the occurrence of the Franciscan or Golden Gate series in the vicinity of Mount Diablo, and the occurrence of the San Pablo formation, with lists of fossils.

778 —— Notes on rocks and minerals from California.

Am. Jour. Sci., 4th ser., vol. v, pp. 421-428; Review, Am. Geol., vol. xxii, p. 377 (10 l.), 1898.

Describes the petrographic and chemical characters of a quartz-amphibole-diorite, a new amphibole pyroxene rock and quartz-alunite rock, and the occurrence of zircon, molybdenite, and tellurium.

779 —— Origin of Yosemite Valley [California].

Abstract, Science, new ser., vol. vii, pp. 358-359, 1898.

Contains summary of paper read before the Geological Society of Washington.

780 —— The succession of the igneous rocks of the Sierra Nevada.

Science, new ser., vol. vii, p. 612 ( $\frac{1}{2}$  p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

781 —— Classification of igneous rocks.

Science, new ser., vol. vii, pp. 622-625, 1898.

782 —— See **Diller** (J. S.), No. 234.

783 —— See **Hill** (R. T.), No. 352.

784 **Tyrrell** (J. Burr). Report on the Doobaunt, Kazan, and Ferguson rivers and the northwest coast of Hudson Bay, and on two overland routes from Hudson Bay to Lake Winnipeg.

Canada Geol. Surv., new ser., vol. ix, Rept. F, 218 pp., 11 pls.; Review by U. S. Grant, Am. Geol., vol. xxi, pp. 128-129, 1898.

Describes the drainage and physical features of the region and the occurrence of Laurentian, Huronian, Cambrian, Silurian, and Glacial deposits.

785 —— The glaciation of north-central Canada.

Jour. of Geol., vol. vi, pp. 147-160, pls. iv-vi, 1898.

Describes the general features of the glaciation of Canada.

786 —— The Cretaceous of Athabasca River [Athabasca].

Ottawa Nat., vol. xii, pp. 37-41, 1898.

Describes the lithologic and faunal characters of the strata and discusses their correlation with the Cretaceous of the Rocky Mountain region.

787 —— The glaciation of north-central Canada.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 662-663, 1898.

Describes the glacial history of the region.

## U.

788 **Udden** (Johan August). Loess as a land deposit.

Geol. Soc. Am., Bull., vol. ix, pp. 6-9, 1898.

Discusses the aqueous and aeolian hypotheses of the origin of the loess.

789 —— Fucoids or coprolites.

Jour. of Geol., vol. vi, pp. 193-198, pls. vii-viii, 1898.

Compares material found in the Devonian of the Mississippi Valley with Hall's description of *Spirophyton* and suggests a mechanical origin of these structures.

790 —— A new well at Rock Island, Ill.

Am. Geol., vol. xxi, pp. 199-200, 1898.

Gives the section of the well to a depth of 635 feet.

791 —— Some preglacial soils.

Iowa Acad. Sci., Proc., vol. v, pp. 102-104; Abstract, Am. Geol., vol. xxi, pp. 262-264, 1898.

Describes the occurrence in Iowa and Illinois and gives a list of fossils collected.

792 —— The mechanical composition of wind deposits.

Augustana Library Publications, No. 1, 69 pp., 1898.

Discusses the character and mode of formation of wind deposits and its bearing on the problem of the loess.

793 —— A geological romance.

Pop. Sci. Mo., vol. liv, pp. 222-229, 7 figs., 1898.

Describes the occurrence, character, and origin of the volcanic ash beds in Kansas.

794 **Uhler** (P. R.). Preliminary notice of a recent series of geological accumulations—the McHenry formation.

Md. Acad. Sci., Trans. pp. 395-400, 1898.

Describes the occurrence, character, and flora of the formation on the western shore of Chesapeake Bay, in Maryland.

795 **Underwood** (George C.). See **Day** (W. C.) No. 227.796 **Upham** (Warren). Niagara Gorge and Saint Davids Channel.

Geol. Soc. Am., Bull., vol. ix, pp. 101-110, 1898; Abstract, Science, new ser., vol. vii, pp. 84-85, 1898.

Describes the Niagara and Saint Davids gorges, the effect of the Laurentian glacial lakes on the gorge erosion, the epeirogenic movements of the region, and the duration of the falls and of the post-Glacial period.

797 —— [Review of "Seventeenth Annual Report of the United States Geological Survey."]

Am. Geol., vol. xxi, pp. 61-64, 1898.

798 —— Shell-bearing drift on Moel Tryfair [Wales].

Am. Geol., vol. xxi, pp. 81-86, 1898.

Compares this drift with that near Boston and in New Hampshire.

799 **Upham** (Warren). [Review of "Geological Survey of New Jersey, Annual Report for 1896."]  
Am. Geol., vol. xxi, pp. 126-128, 1898.

800 —— [Review of "Report on Doobaunt, Kazan, and Ferguson rivers and the northwest coast of Hudson Bay, and on two inland routes from Hudson Bay to Lake Winnipeg," by J. B. Tyrrell.]  
Am. Geol., vol. xxi, pp. 128-129, 1898.

801 —— Valley moraines and drumlins in the English lake district [England].  
Am. Geol., vol. xxi, pp. 165-170, 1898.  
Describes certain drift phenomena in England and compares them with the drift of North America.

802 —— Drumlins in Glasgow.  
Am. Geol., vol. xxi, pp. 235-243, 1 fig., 1898.  
Compares glacial phenomena of Scotland with those of North America.

803 —— The parallel roads of Glen Roy [Scotland].  
Am. Geol., vol. xxi, pp. 294-300, 1898.  
Compares the glacial lakes of the region with those of North America.

804 —— [Review of "Water resources of Indiana and Ohio," by Frank Leverett.]  
Am. Geol., vol. xxi, p. 324 (½ p.), 1898.

805 —— [Review of "New development in well boring and irrigation in eastern South Dakota," by N. H. Darton.]  
Am. Geol., vol. xxi, p. 325 (½ p.), 1898.

806 —— Ben Nevis, the last stronghold of the British ice-sheet.  
Am. Geol., vol. xxi, pp. 375-380, 1898.  
Describes glacial phenomena of the region and their resemblances to certain phenomena in North America.

807 —— The Mecklenburg or Baltic moraines.  
Am. Geol., vol. xxii, pp. 43-49, 1898.  
Compares these moraines with those of the United States.

808 —— [Review of "Geology of the Yukon gold district," by J. E. Spurr.]  
Am. Geol., vol. xxii, pp. 49-50, 1898.

809 —— [Review of "The Valley Regions of Alabama (Paleozoic strata), Parts I-II," by Henry McCalley.]  
Am. Geol., vol. xxii, p. 52 (½ p.), 1898.

810 —— [Review of "Summary report of the Geological Survey department (of Canada) for the year 1897."]  
Am. Geol., vol. xxii, pp. 52-53, 1898.

811 **Upham** (Warren). Fjords and submerged valleys of Europe.  
 Am. Geol., vol. xxii, pp. 10-108, 1898.  
 Discusses evidence of Pleistocene uplift and refers to literature regarding a contemporaneous uplift in North America.

812 — Raised shore lines at Trondhjem [Norway].  
 Am. Geol., vol. xxii, pp. 149-154, 1898.  
 Compares the raised shore lines with similar phenomena in eastern North America.

813 — Glacial rivers and lakes in Sweden.  
 Am. Geol., vol. xxii, pp. 230-235, 1898.  
 Compares them with glacial lakes and rivers in the United States.

814 — [Review of "Geological Survey of New Jersey. Annual Report of the State Geologist for 1897."]  
 Am. Geol., vol. xxii, pp. 239-240, 1898.

815 — [Review of "Iowa Geological Survey, vol. viii."]  
 Am. Geol., vol. xxii, p. 240 ( $\frac{2}{3}$  p.), 1898.

816 — Giants' Kettles near Christiania and in Lucerne.  
 Am. Geol., vol. xxii, pp. 291-299, 1898.  
 Compares them with similar glacial phenomena in America.

817 — [Review of "Fifteenth Annual Report of State Geologist (New York) for the year 1895, vol. i."]  
 Am. Geol., vol. xxii, pp. 324-326, 1898.

818 — [Review of "Interglacial deposits in Iowa."]  
 Am. Geol., vol. xxii, p. 326 ( $\frac{2}{3}$  p.), 1898.

819 — [Review of "Report on a traverse of the northern part of the Labrador Peninsula from Richmond Gulf to Ungava Bay," by A. P. Low.]  
 Am. Geol., vol. xxii, pp. 326-327, 1898.

820 — Primitive man in the Somme Valley [France].  
 Am. Geol., vol. xxii, pp. 350-362, 1898.  
 Describes terraces and compares them with New England terraces.  
 Correlates stages of the Ice Age with those in the United States.

821 — Evidences of epeirogenic movements causing and terminating the Ice Age.  
 Abstracts: Science, new ser., vol. viii, pp. 463-464 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 250 ( $\frac{1}{2}$  p.), 1898.

822 — [Abstracts of geological papers read before the American Association for the Advancement of Science at the Boston meeting, 1898.]  
 Science, new ser., vol. viii, pp. 462-471, 501-506; Am. Geol., vol. xxii, pp. 248-265, 1898.

823 **Upham** (Warren). Fluctuations of North American glaciation shown by interglacial soils and fossiliferous deposits.  
Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 297 (½ p.); Am. Geol., vol. xxii, p. 258 (½ p.), 1898.

824 — Time of erosion of the Upper Mississippi, Minnesota, and St. Croix valleys.  
Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 297-298 (½ p.); Science, new ser., vol. viii, p. 470 (½ p.); Am. Geol., vol. xxii, pp. 258-259 (½ p.), 1898.

**V.**

825 **Van Diest** (E. C. and P. H.). Notes on the geology of the western slope of the Sangre de Cristo Range in Costillo County, Colorado.  
Colo. Sci. Soc., Proc., vol. v, pp. 76-80, 2 figs., 1898.  
See Bibliography and Index for 1896, No. 689.

826 **Van Hise** (C. R.). Metamorphism of rocks and rock flowage.  
Geol. Soc. Am., Bull., vol. ix, pp. 269-328, pl. 19, 2 figs.; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 75-91; Review, Am. Geol., vol. xxii, 378-379, 1898.  
Describes the physico-chemical principles operative in the alteration of rocks and their application to the changes in the earth's crust, and the general character of the molecular dynamic action and mass dynamic action accompanying it.

827 — Estimates and causes of crustal shortening.  
Jour. of Geol., vol. vi, pp. 10-64, 11 figs., 1898.  
Discusses the evidences for the shortening of the earth crust and the causes which account for such phenomena.

828 — The volume relations of original and secondary minerals in rocks.  
Abstracts: Science, new ser., vol. viii, p. 465 (6 l.); Am. Geol., vol. xxii, p. 252 (5 l.), 1898.

829 — See **Diller** (J. S.), No. 234.

830 **Van Ornum** (Mr.). [Geology and its relations to topography.]  
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 90-92, 1898.  
In discussion of paper by John C. Branner on the same subject.

831 **Vaughan** (T. Wayland). [Fossil corals collected by R. T. Hill in Costa Rica.]  
Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, p. 275 (½ p.), 1898.  
Names the species determined.

832 — and **Hill** (R. T.). The Lower Cretaceous Gryphaeas of the Texas region.  
See Hill (R. T.), and Vaughan (T. W.), No. 356.

833 **Vaughan** (T. Wayland) and **Hill** (R. T.) Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters.

See Hill (R. T.) and Vaughan (T. W.), No. 355.

834 ——— Nueces folio, Texas.

See Hill (R. T.) and Vaughan (T. W.), No. 357.

835 **Veatch** (Arthur C.). Notes on the Ohio Valley in southern Indiana.

Jour. of Geol., vol. vi, pp. 257-272, 12 figs., 1898.

Describes the physiographic features of Spencer County, the occurrence and character of Tertiary strata and of the loess, and the oscillations evidenced by these deposits.

836 ——— An old river channel in Spencer County [Indiana].

Ind. Acad. Sci., Proc., 1897, pp. 266-271, with geologic map and sections, 1898.

Describes the physiography of the region and the occurrence of a river channel, as shown by well records. Discusses its probable Tertiary age.

837 **Vermeule** (C. C.). Notes and data pertaining to the physical geography of the State [New Jersey].

N. J. Geol. Surv., Final Rept., vol. iv, 189 pp., 1898.

Gives notes on the latitude and longitude of places, elevations, etc.

838 **Wade** (W. M.). Copper mining at Kamloops, British Columbia.

Eng. and Mg. Jour., vol. lxvi, pp. 698-699, 1898.

Gives brief notes on the occurrence of copper.

839 **Wadsworth** (M. E.). The origin and mode of occurrence of the Lake Superior copper deposits.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 669-696, 1898.

Discusses the phenomena of the alteration of rock masses, the formation of ore deposits, and the character and relations of the Keweenawan and Potsdam series and the lava flows.

840 ——— Some methods of determining the positive or negative character of mineral plates in converging polarized light with the petrographical microscope.

Am. Geol., vol. xxi, pp. 170-175, 1898.

841 ——— Zirkelite—a question of priority.

Jour. of Geol., vol. vi, pp. 199-200; Am. Jour. Sci., 4th ser., vol. v. n. 153; Am. Geol., vol. xxi, pp. 133-134, 1898.

Discusses the use of the term in mineralogy and petrology.

842 **Wagner** (George). On some turtle remains from the Fort Pierre.

Kan. Univ. Quart., vol. vii, pp. 201-203, 2 figs., 1898.

Describes portions of *Toxochelys latiremis* Cope.

843 **Walcott** (Charles Doolittle). Report of the Director of the U. S. Geological Survey for the fiscal year ending June 30, 1898.  
U. S. Geol. Surv., 19th Ann. Rept., Pt. I, 422 pp., pls. i-ii, 1898.  
Gives a general review of the work undertaken by the Survey during the year 1897-98.

844 — **Fossil Medusæ.**  
U. S. Geol., Surv., Mon. XXX, 198 pp., pls. i-xlvii, figs. 1-26; Review by H. S. Williams, Am. Jour. Sci., 4th ser., vol. vi, p. 509, 1898.  
Describes the occurrence and preservation of Medusæ, and the characters of the forms from the Middle and Lower Cambrian, Jurassic, and Permian strata.

845 — Note on the brachiopod fauna of the quartzitic pebbles of the Carboniferous conglomerates of the Narragansett Basin, Rhode Island.  
Am. Jour. Sci., 4th ser., vol. vi, pp. 327-328, 1898.  
Names the Cambrian fossils found in the pebbles and discusses the evidence as to the locality from which the pebbles were derived.

846 **Walker** (T. L.). Causes of variation in the composition of igneous rocks.  
Am. Jour. Sci., 4th ser., vol. vi, pp. 410-415, 1898.  
Discusses various theories on the subject.

847 **Ward** (L. F.). A new fossil *Eucalyptus* from Kansas.  
The Plant World, vol. i, pp. 75-76, 2 figs., 1898.  
Describes *Eucalyptus gouldii* n. sp.

848 **Warren** (C. H.). Mineralogical notes.  
Am. Jour. Sci., 4th ser., vol. vi, pp. 116-124, figs. 1-11; Review, Am. Geol., vol. xxii, p. 379 ( $\frac{1}{2}$  p.), 1898.  
Describes the occurrence of melanotekite and kentrolite, pseudomorphs after phenacite, crystallized tapiolite and tantalite, and cobaltiferous smithsonite.

849 **Washington** (Henry S.). Sölsbergite and tinguaite from Essex County, Massachusetts.  
Am. Jour. Sci., 4th ser., vol. vi, pp. 176-187; Review, Am. Geol., vol. xxii, p. 380 ( $\frac{1}{2}$  p.), 1898.  
Describes and compares their chemical composition with that of material from other localities.

850 — The Jerome (Kansas) meteorite.  
Am. Jour. Sci., 4th ser., vol. v, pp. 447-454; Review, Am. Geol., vol. xxii, p. 377 ( $\frac{1}{4}$  p.), 1898.  
Describes the microscopic and chemical characters of the material.

851 — The petrographical province of Essex County, Massachusetts. I.  
Jour. of Geol., vol. vi., pp. 787-808, 1898.  
Describes the characters of granite, akerite, nordmarkite, nepheline-syenite and pulaskitic syenite. Includes a number of chemical analyses.

852 **Watson** (Thomas L.). A preliminary petrographic report on metamorphic rocks in and around Dahlonega, Lumpkin County, Georgia.

Ga. Geol. Surv., Bull. No. 4-A, pp. 320-330, 1898.

Describes the schists and basic rocks of the region.

853 — Weathering of diabase near Chatham, Virginia.

Am. Geol., vol. xxii, pp. 85-101, 1898.

Describes the petrographic character of the rock, gives chemical analyses of the fresh and weathered material, and discusses the process of decay in the rock weathering.

854 **Weed** (Walter Harvey). See **Diller** (J. S.), No. 234.

855 — and **Pirsson** (Louis Valentine). Geology and mineral resources of the Judith Mountains of Montana.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 446-616, pls. lxi-lxxxvi figs. 32-54, 1898.

Describes the physiography, geologic history, occurrence, and character of the Paleozoic and Mesozoic rocks, the detailed geology, character, and occurrence of the igneous rocks, the dynamic and structural geology and the mineral resources of the region.

856 — Geology of the Castle Mountain mining district, Montana.

Review, *Zeit. für. prakt. Geol.*, 1898, heft 9, pp. 330-331, 1898.

See Bibliography and Index for 1896, No. 723.

857 **Weeks** (Fred Boughton). Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1897.

U. S. Geol. Surv., Bull. No. 156, 130 pp., 1898.

Contains list of titles of papers arranged alphabetically by authors' names and a subject index.

857a **Weidman** (Samuel). A contribution to the geology of the pre-Cambrian igneous rocks of the Fox River Valley, Wisconsin.

Wis. Geol. and Nat. Hist. Surv. Bull. No. III, Sci. Ser., No. 2, pp. 1-63, pls. i-x, figs. 1-13, 1898.

Describes the geologic features of the region and the petrographic characters of the igneous rocks. Includes a geologic map.

858 — See **Diller** (J. S.), No. 234.

859 **Weller** (Stuart). A bibliographic index of North American Carboniferous invertebrates.

U. S. Geol. Surv., Bull. No. 153, 653 pp., 1898.

Contains a chronologic catalogue of papers, a list of authors, a summary of classes and genera, and an alphabetical list of genera and species, with bibliographic references.

860 **Weller** (Stuart). The Batesville sandstone of Arkansas.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 251-282, pls. xix-xxi: Review by C. R. Keyes, Am. Geol., vol. xxi, pp. 129-131, 1898.

Reviews the literature on the formation, describes fossils recently collected, and discusses its correlation from the paleontologic and stratigraphic data.

861 — Description of a new species of *Hydreionocrinus* from the Coal Measures of Kansas.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 372-374, pl. xxxvi, 1898.

## 862 — Description of Devonian crinoids and blastoids from Milwaukee, Wisconsin.

N. Y. Acad. Sci., Annals, vol. xi, pp. 117-124, pl. xiv, 1898.

Gives a brief account of the Devonian rocks and a description of several new species.

## 863 — [Review of "Fourteenth Annual Report of the New York State Geologist for 1894."]

Jour. of Geol., vol. vi, pp. 205-207, 1898.

## 864 — Classification of the Mississippian series.

Jour. of Geol., vol. vi, pp. 303-314, figs. A-B, 1898.

Discusses the principles of geologic classification; describes the geologic history prior to and during the formation of the Mississippian series and the character of the fauna and physical changes of the Osage epoch.

## 865 — The Silurian fauna interpreted on the epicontinental basis.

Jour. of Geol., vol. vi, pp. 692-703, 2 figs., 1898.

Discusses the character of the movement at the close of the Ordovician, the distribution of Silurian sediments, and the connection between the Silurian waters of Europe and America; compares the fauna of the two regions.

866 — [Review of "The Naples fauna (fauna with *Manticoceras intumescens*) in western New York," by John M. Clarke.]

Jour. of Geol., vol. vi, pp. 855-857, 1898.

## 867 — Osage vs. Augusta.

Am. Geol., vol. xxii, pp. 12-16, 1898.

Discusses the nomenclature of the Mississippian series.

868 **Wells** (J. Walter). The mispickel ores of Deloro, Ontario.

Federated Can. Mg. Inst., Jour., vol. ii, pp. 127-133, 1897.

Describes the character and occurrence of the gold-bearing veins.

869 **Wheeler** (H. A.). Clay deposits [Missouri].

Mo. Geol. Surv., vol. xi, 622 pp., 39 pls., 15 figs., 1896; Abstract, Eng. and Mg. Jour., vol. lxvi, pp. 426-427, 1898.

Describes character, origin, and classification of clay, its chemical and physical properties, and the occurrence of clay in various parts of Missouri.

870 **White** (David). *Omphaloploios*, a new Lepidodendroid type.

Geol. Soc. Am., Bull., vol. ix, pp. 329-342, pls. 20-23; Abstract, Science, new ser., vol. vii, p. 80 (101.), 1898.

Describes material from the Lower Coal Measures of Missouri and the characters of *Lepidodendron cyclostigma*.

871 — The probable age of the McAlister coal group.

Science, new ser., vol. vii, p. 612 ( $\frac{1}{3}$  p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

872 — and **Schuchert** (Charles). Cretaceous series of the west coast of Greenland.

Geol. Soc. Am., Bull., vol. ix, pp. 343-368, pls. 24-26; Abstract, Science, new ser., vol. vii, pp. 52-53 ( $\frac{1}{2}$  p.); Review, Nat. Sci., vol. xiii, pp. 230-232, 1898.

Describes the general geologic features of the region and gives lists of fossils collected from the various localities.

873 **White** (I. C.). The Pittsburg coal bed.

Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 187-198; Am. Geol., vol. xxi, pp. 49-60; Review, Zeit. für prak. Geol., 1898, heft 7, pp. 250-251, 1898.

Discusses the age of the coal bed and describes its structure and the lithologic character of the associated strata.

874 **White** (Theodore G.). A contribution to the petrography of the Boston Basin [Massachusetts].

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 117-156, 5 pls., 1897.

See Bibliography and Index for 1897, No. 686.

875 **Whiteaves** (J. F.). On some fossil cephalopods in the Museum of the Geological Survey of Canada, with descriptions of eight new species that appear to be new. From the Cambro-Silurian rocks of the Provinces of Quebec, Ontario, and Manitoba.

Ottawa Nat., vol. xii, pp. 116-127, 1898.

876 — Note on a fish tooth from the Upper Arisaig series of Nova Scotia.

Brit. Assoc. Adv. Sci., Report 1897, pp. 656-657, 1898.

Discusses its bearing on the age of the beds.

877 **Whitfield** (R. P.). Assisted by E. O. Hovey. Catalogue of the type and figured specimens in the paleontological collections of the geological department, American Museum of Natural History.

Am. Mus. Nat. Hist., Bull., vol. xi, pp. i-vii, 1-71, 1898.

878 — Observations on the genus *Barretia*.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, p. 200 (81.), 1898.

See Bibliography and Index for 1897, No. 693.

879 **Whitten** (W. M.). "Quicksand pockets" in the "blue clay" of South Bend [Indiana].  
 Ind. Acad. Sci., Proc. 1897, pp. 234-240, 3 figs., 1898.  
 Describes local features of the drift.

880 **Whittle** (Charles L.). The clays and clay industries of Massachusetts.  
 Eng. and Mg. Jour., vol. lxvi, pp. 245-246, 1898.  
 Includes notes on the occurrence and distribution of clay deposits in Massachusetts.

881 — The building and road stones of Massachusetts.  
 Eng. and Mg. Jour., vol. lxvi, pp. 336-337, 1898.  
 Describes their general character and occurrence.

882 **Wieland** (George R.). The Protostegan Plastron.  
 Am. Jour. Sci., 4th ser., vol. v, pp. 15-20, pl. ii, figs. 1-2, 1898.  
 Describes material from the Cretaceous of South Dakota.

883 **Wilkens** (H. A. J.), **Nitze** (Henry B. C.) and. Gold mining in North Carolina and adjacent southern Appalachian regions.  
 See Nitze (H. B. C.) and Wilkens (H. A. J.), No. 579.

884 **Williams** (Albert, jr.). Faults.  
 Mines and Minerals, vol. xviii, pp. 298-301, 10 figs., 1898.  
 Describes the results of faulting and discusses the origin of faults.

885 **Williams** (E. H., jr.). [Geology and its relations to topography.]  
 Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 84-86, 1898.  
 In discussion of paper by John C. Branner on the same subject.

886 — Notes on Kansan drift in Pennsylvania.  
 Am. Phil. Soc., Proc., vol. xxxvii, pp. 84-87, 1 fig., 1898.  
 Discusses certain glacial phenomena and describes the drift at East Warren, Pennsylvania.

887 **Williams** (Henry Shaler). The classification of stratified rocks.  
 Jour. of Geol., vol. vi, pp. 671-678, 1898.  
 Describes the work of the International Congress of Geologists and the U. S. Geological Survey in adjusting classifications and nomenclatures to a common scheme.

888 — [Review of "Volcanoes of North America; a reading lesson for students of geography and geology," by Israel C. Russell.]  
 Am. Jour. Sci., 4th ser., vol. v, pp. 74-75, 1898.

889 — [Review of "Geology of Johnson County, Iowa," by Samuel Calvin.]  
 Am. Jour. Sci., 4th ser., vol. v, pp. 149-151, 1898.

890 — [Review of "Earth movement," by Charles R. Van Hise.]  
 Am. Jour. Sci., 4th ser., vol. v, pp. 230-231, 1898.

891 — [Review of "The development of Glyptoceras and the phylogeny of the Glyptoceratidae," by James Perrin Smith.]  
 Am. Jour. Sci., 4th ser., vol. v, p. 315, 1898.

892 **Williams** (Henry Shaler). [Review of "Fossil Medusæ," by Charles D. Walcott.]

Am. Jour. Sci., 4th ser., vol. vi, p. 509, 1898.

893 — [Review of "Report on the geology of southwest Nova Scotia, etc."]

Am. Jour. Sci., 4th ser., vol. vi, p. 510 ( $\frac{1}{2}$  p.), 1898.

894 **Willis** (Bailey). Some coal fields of Puget Sound [Washington].

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 399-436, pls. lii-lviii, figs. 26-31, 1898.

Describes the physiography, stratigraphic succession, and structure of the region, discusses the age of the beds, and gives an account of the occurrence of coal.

895 — Stratigraphy and structure of the Puget group, Washington.

Abstract, Geol. Soc. Am., Bull., vol. ix, pp. 2-6, 1897.

Describes the physiography of the region and the stratigraphy and structure of the Puget group. See Bibliography and Index for 1897, No. 699.

896 — Drift phenomena of Puget Sound [Washington].

Geol. Soc. Am., Bull., vol. ix, pp. 111-162, pls. 6-10, 1898; Review by W. M. Davis, Science, new ser., vol. vii, pp. 704-705 ( $\frac{1}{2}$  p.), 1898.

Describes the physiography and Glacial phenomena and deposits of the region.

897 — Drift phenomena of Puget Sound and their interpretation.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 653 ( $\frac{3}{4}$  p.), 1898.

898 — [Contribution to a "Symposium of the classification and nomenclature of geologic time divisions."]

Jour. of Geol., vol. vi, pp. 345-347, 1898.

899 — [Review of "The principles of pre-Cambrian geology" by C. R. Van Hise.]

Jour. of Geol., vol. vi, pp. 419-431, 1898.

900 — See **Diller** (J. S.), No. 234.

901 **Williston** (S. W.). The Upper Cretaceous of Kansas. A historical review. Addenda.

Kan. Univ. Geol. Surv., vol. iv, pp. 28-32, pls. i-iv, 1898.

Gives an account of the work of various parties that have collected fossils from the Cretaceous beds of Kansas.

902 — Birds, Dinosaurs, Crocodiles, Mosasaurs, and Turtles [Cretaceous].

Kan. Univ. Geol. Surv., vol. iv, pp. 41-411, pls. v-lxxxiv, 1898.

Gives a general description of the various genera and also includes descriptions of many species.

903 — The Pleistocene of Kansas.

Kan. Acad. Sci., Trans., vol. xv, pp. 90-94, 1898.

Gives a list and description of Pleistocene vertebrates in Kansas and describes the occurrence of the Equus beds.

904 **Williston** (S. W.). Notice of some vertebrate remains from the Kansas Permian.

Kan. Acad. Sci., Trans., vol. xv, pp. 120-122, 1898.

Describes fragments of *Cricotus* and *Clepsydrops* Cope. Considers the red beds Triassic.

905 — The sacrum of *Morosaurus*.

Kan. Univ. Quart., vol. vii, pp. 173-175, 2 figs., 1898.

Describes material from Converse County, Wyoming.

906 — [On the genus *Platecarpus*].

Kan. Univ. Quart., vol. vii. Editorial notes, p. 235, 1898.

Describes recently discovered material.

907 — [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]

Jour. of Geol., vol. vi, pp. 342-345, 1898.

908 — Miocene Edentates.

Science, new ser., vol. viii, p. 132 ( $\frac{1}{4}$  p.), 1898.

Refers to an error of Prof. Cope.

909 **Willmot** (A. B.). Notes on the Michipicoton gold field [Ontario].

Federated Can. Mg. Inst., Jour., vol. iii, pp. 100-102, 1898.

Contains brief notes on the gold ores north of Lake Superior.

910 **Wilson** (Herbert M.). Topography of Mexico.

Am. Geogr. Soc., Bull., vol. xxix, pp. 249-260, with map, 1897.

Review by W. M. Davis, Science, new ser., vol. vii, p. 125 ( $\frac{1}{2}$  p.), 1898.

911 **Wilson** (J. W.). Geology of Effingham Ridge. Preliminary report [Kansas].

Kan. Acad. Sci., Trans., vol. xv, pp. 113-114, 1898.

Describes the occurrence of Carboniferous rocks and Glacial drift.

912 **Wilson** (W. J.). Notes on the Pleistocene geology of a few places in the Ottawa Valley [Canada].

Ottawa Nat., vol. xi, pp. 209-220, 1898.

Describes the glacial geology of the region.

913 **Winchell** (Horace V.). The Lake Superior iron ore region, U. S. A.

Excerpt from the Federation Institution of Mg. Engrs., Trans., 70 pp., 7 figs., London, 1897; Review, Zeit. fur prak. Geol., 1898, heft 6, pp. 207-212, 1898.

Gives a historical sketch of the region, a discussion of the geologic features and of the genesis of the ore deposits, and the classification of the pre-Silurian rocks.

914 — On the occurrence of cubanite at Butte, Montana.

Am. Geol., vol. xxii, pp. 245 ( $\frac{2}{3}$  p.), 1898.

Describes its character and occurrence.

915 **Winchell** (Newton H.). [Geology and its relations to topography.]

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 83-84, 1898.

In discussion of paper by John C. Branner on the same subject.

916 **Winchell** (Newton H.). The determination of the feldspars.

Am. Geol., vol. xxi, pp. 12-49, 28 figs., 1898.

Discusses methods of determining feldspars.

917 — [Review of "Volcanoes of North America; a reading lesson for students of geography and geology," by Israel C. Russell.]

Am. Geol., vol. xxi, pp. 65-66, 1898.

918 — Some resemblances between the Archean of Minnesota and Finland.

Am. Geol., vol. xxi, pp. 222-229, 1898.

Describes the succession of the Archean series in Minnesota and compares them with the Archean of Finland.

919 — The significance of the fragmental eruptive débris at Taylors Falls, Minnesota.

Am. Geol., vol. xxii, pp. 72-78, 1898.

Describes the occurrence of two beds of conglomerate and their age and relation to the igneous rocks. Notes similar occurrences at other localities.

920 — The question of the differentiation of magmas.

Am. Geol., vol. xxii, editorial comment, pp. 113-123, 1898.

Reviews the literature of the subject and gives the writer's views.

921 — Note on the characters of mesolite from Minnesota.

Am. Geol., vol. xxii, pp. 228-230, 1898.

Describes the microscopic characters of the material.

922 — The origin of the Archean igneous rocks.

Am. Geol., vol. xxii, pp. 299-310; Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 303-304; Science, new ser., vol. viii, pp. 504-505 ( $\frac{1}{2}$  p.), 1898.

Reviews previous discussions of the subject and gives the author's views.

923 — Thomsonite and lintonite from the north shore of Lake Superior.

Am. Geol., vol. xxii, pp. 347-349, 1898.

Describes occurrence and character of the material.

924 — The oldest known rock.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 302-303; Science, new ser., vol. viii, p. 504 ( $\frac{1}{2}$  p.), Am. Geol., vol. xxii, pp. 262-263 ( $\frac{1}{2}$  p.), 1898.

Describes certain greenstones and associated rocks.

925 **Winslow** (Arthur). A natural bridge in Utah.

Science, new ser., vol. vii, pp. 557-558, 2 figs., 1898.

Describes its character and origin.

926 **Wolff** (J. E.). Petrography [vicinity of Boston, Mass.].

Am. Assoc. Adv. Sci., Fiftieth Anniversary Meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, p. 63, Salem, Mass., 1898.

Gives a brief note on the petrographic features of the region.

927 **Wolff** (J. E.). The relation of the granite to the ore deposits at Franklin Furnace, New Jersey.  
 Science, new ser., vol. viii, p. 560 (4 p.), 1898.  
 Contains summary of paper read before the geological conference of Harvard University.

928 —— Preliminary descriptions of the specimens of igneous rocks in the collections from the Isthmus of Panama and Costa Rica, made by Robert T. Hill.  
 Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, pp. 276-281, 1898.  
 Includes brief description of the petrographic characters of the specimens.

929 —— Occurrence of native copper at Franklin Furnace, New Jersey.  
 Am. Acad. Arts and Sci., Proc., vol. xxxiii, pp. 430-431, 1898.

930 —— See **Diller** (J. S.), No. 234.

931 —— and **Brooks** (Alfred Hulse). The age of the Franklin white limestone of Sussex County, New Jersey.  
 U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 431-457, pl. lxxxiii, figs. 77-81, 1898; Abstract, Geol. Soc. Am., Bull., vol. viii, p. 397, 1897.  
 Gives a review of previous opinions, a description of the lithologic character and structure of the formation, and summary and conclusions.

932 **Woodman** (J. E.). Geology: North shore [vicinity of Boston, Mass.].  
 Am. Assoc. Adv. Sci., Fiftieth Anniversary Meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 9-20, 3 figs., Salem, Mass., 1898.  
 Describes the geologic features of the region and gives lists of papers on its geology.

933 **Woolman** (Lewis). Artesian wells in New Jersey.  
 N. J. Geol. Surv., Ann. Rept., 1897, pp. 211-295, 1898.  
 Gives sections of many artesian wells.

934 —— Fossil mollusks and diatoms from the Dismal Swamp, Virginia and North Carolina: indication of the geological age of the deposits; with notes on the diatoms by Charles C. Boyer.  
 Phil. Acad. Nat. Sci., Proc., 1898, pp. 414.  
 Describes the occurrence of the fossils, gives lists of those determined, and discusses the age of the beds.

935 **Wortman** (J. L.). The extinct Camelidæ of North America and some associated forms.  
 Am. Mus. Nat. Hist., Bull., vol. x, pp. 93-142, pl. xi, 23 figs., 1898.  
 Includes a review of the genera and species of North American Tylopoda, a description of new material, and a discussion of the various steps in their evolution and of certain osteological characters.

936 **Wright** (G. Frederick). Supposed "corduroy road" of late glacial age at Amboy, Ohio.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 298 ( $\frac{1}{2}$  p.); Science, new ser., vol. viii, p. 470 ( $\frac{1}{2}$  p.); Am. Geol., vol. xxii, p. 259 ( $\frac{1}{2}$  p.), 1898.

937 — The age of Niagara Falls, as indicated by the erosion at the mouth of the gorge.

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939 — Clayey bands of the glacial delta of the Cuyahoga River at Cleveland, Ohio, compared with those in the implement-bearing deposits of the glacial delta at Trenton, N. J.

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940 — Glacial observations in the Champlain-St. Lawrence Valley.

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941 **Yeates** (W. S.), **McCallie** (S. W.), and **King** (Francis P.). A preliminary report on a part of the gold deposits of Georgia.

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Describes the occurrence of gold ores in the State, including local details of mines.

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The papers in the foregoing bibliography which have the following numbers were printed in 1895, 1896, and 1897, or bear one of these dates. A few were overlooked in compiling the literature of those years (Bulletins 146, 149, and 156), but the greater portion were not received in time to be incorporated therein:

							1895.
							183
							1896.
380 <i>a</i> ,	380 <i>b</i> ,	415	481	510	756	869	
							1897.
33	118	154	325	490	702		
34	119	180	326	552	756		
46	120	192	327	559	766		
47	121	193	331	568	868		
75	132	241	334	569	874		
76	142	252	358	570	910		
112	151	300	405	579	913		

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 Calciferous, Cushing, No. 182.  
 Calciferous, Ells, No. 256.  
 Callioun limestone, etc., Beede, No. 65.  
 Callaway limestone, Keyes, Nos. 415, 431.

## Geologic Formations Described—Continued.

Cap-au-gres sandstone, Keyes, No. 431.  
 Cape Cod series, Shaler, No. 695.  
 Cape May formation, Salisbury, No. 682.  
 Cavaniol group, Drake, No. 239.  
 Cedar formation, Turner, No. 776.  
 Cedar Valley stage, Calvin, Nos. 120, 121, 124.  
 Ceratops beds, Marsh, No. 523.  
 Chalk Mountain nevadite, Emmons, No. 259.  
 Chattanooga shale, Campbell, Nos. 128, 129.  
 Chazy, Bell, No. 68.  
 Chazy, Cushing, No. 182.  
 Chazy, Ells, No. 256.  
 Chemung, Ries, Nos. 658, 659.  
 Chemung group, Luther, No. 505.  
 Chemung series, Prosser, No. 642.  
 Cherokee shale, Crane, No. 167.  
 Cherokee shale, Marbut, Nos. 517, 518, 520.  
 Cherokee shales, Haworth, No. 335.  
 Cherokee shales, Keyes, No. 435.  
 Cherryville shale, Haworth, No. 335.  
 Cheshire quartzite, Emerson, No. 258.  
 Chester amphibolite, Emerson, No. 258.  
 Cheyenne sandstones, Gould, No. 308.  
 Chickamauga limestone, Campbell, No. 127.  
 Chico formation, Fairbanks, No. 262.  
 Chicopee shale, Emerson, No. 258.  
 Chocolate limestone, Beede, No. 65.  
 Chouteau limestone, Shepard, No. 698.  
 Churchill sandstone, Tyrrell, No. 784.  
 Cimarron series, Adams, No. 10.  
 Cimarron series, Jones, No. 397.  
 Clearwater shale, Tyrrell, No. 786.  
 Clinch sandstone, Campbell, No. 127.  
 Clinton, Bell, No. 68.  
 Clinton, Ries, No. 659.  
 Clinton formation, Foerste, No. 273.  
 Clinton limestone, Blatchley and Ashley, No. 92.  
 Clinton shale, Luther, No. 505.  
 Coal Measures, Drake, No. 239.  
 Coal Measures, Keyes, No. 418.  
 Coatzacoalcos formation, Spencer, No. 726.  
 Colorado, Bain, No. 37.  
 Colorado formation, Todd, Nos. 769, 773.  
 Colorado formation, Spurr, No. 739a.  
 Columbia formation, Spencer, Nos. 726, 730.  
 Comanche Peak formation, Hill and Vaughan, No. 537.  
 Comanche series, Gould, No. 308.  
 Como group, Knight, No. 446.  
 Conodont bed, Grabau, No. 312.  
 Conway schist, Emerson, No. 258.  
 Corbin conglomerate lentil, Campbell, Nos. 128, 129.  
 Corniferous, Blatchley and Ashley, No. 92.  
 Corniferous limestone, Bishop, No. 80.  
 Corniferous limestone, Luther, No. 505.  
 Cottonwood limestone, Keyes, No. 424.  
 Couchiching, Coleman, No. 161.  
 Crosswicks clay, Clark, No. 152.  
 Crystal sandstone, Keyes, No. 415.  
 Cuchara beds, Osborn, No. 585.  
 Culebra clay, Hill, No. 352.  
 Dakota, Bain, Nos. 34, 37.  
 Dakota, Darton, No. 194.

## Geologic Formations Described—Continued.

Dakota formation, Spurr, No. 739a.  
 Dakota formation, Todd, No. 769.  
 Dakota group, Gould, No. 308.  
 Dakota sandstone, Beede, No. 67.  
 Dakota sandstone, Marsh, No. 524.  
 Deer Creek limestone, Haworth, No. 335.  
 De Kalb limestone, Bain, No. 39.  
 Delaware stage, Calvin, No. 123.  
 Del Rio clay, Hill and Vaughan, No. 357.  
 Des Moines, Bain, Nos. 34, 36, 39.  
 Des Moines, Keyes, No. 435.  
 Des Moines, Leonard, No. 483.  
 Des Moines, Tilton and Bain, No. 766.  
 Des Moines series, Keyes, Nos. 415, 418, 430.  
 Des Moines series, Shepard, No. 698.  
 Des Moines stage, Beyer, No. 76.  
 Des Moines stage, Calvin, No. 120.  
 Des Moines stage, Marbut, Nos. 520, 521.  
 Dismal formation, Campbell, No. 127.  
 Dotson sandstone, Campbell, No. 127.  
 Douty gravel, Willis, No. 896.  
 Dover shale and sandstone, Beede, No. 65.  
 Dresbach shale, Berkey, No. 74.  
 Dundee limestone, Sherzer, No. 699.  
 Earlham limestone, Bain, No. 39.  
 Earlton limestone, Haworth, No. 335.  
 Edwards formation, Hill and Vaughan, No. 357.  
 Ekmont limestone, Beede, No. 65.  
 Elgin sandstone, Haworth, No. 335.  
 Elk Falls limestone, Haworth, No. 335.  
 Elk Mountain porphyry, Emmons, No. 259.  
 Empire limestone, Bagg, No. 26.  
 Empire limestone, Dall, No. 186.  
 Empire limestone, Hill, No. 352.  
 Encrinial limestone, Grabau, No. 312.  
 Equus beds, Williston, No. 903.  
 Erie limestone, Haworth, No. 335.  
 Esopus, Ries, No. 658.  
 Eureka limestone, Haworth, No. 335.  
 Eureka shale, Drake, No. 239.  
 Eureka shale, Shepard, No. 698.  
 Fayette breccia, Calvin, Nos. 120, 124.  
 Fayetteville shale, Drake, No. 239.  
 Flathead quartzite, Griswold, No. 321.  
 Flanagan chert, Campbell, No. 128.  
 Florencia formation, Pilsbry, No. 628.  
 Folley limestone, Keyes, No. 431.  
 Forbes limestone, Keyes, No. 424.  
 Fordham gneiss, Merrill, No. 548.  
 Fort Riley horizon, Cummins, No. 180.  
 Fort Worth limestone, Hill and Vaughan, No. 357.  
 Fortymile series, Emmons, No. 260.  
 Franeiscan series, Turner, No. 777.  
 Franeonia sandstone, Berkey, No. 74.  
 Franklin white limestone, Wolff and Brooks, No. 531.  
 Fredericksburg dolomite, Keyes, No. 415.  
 Galena limestone, Blatchley and Ashley, No. 92.  
 Galena series, Sardeson, No. 686.  
 Gallatin, Griswold, No. 321.  
 Garnett limestone, Haworth, No. 335.  
 Garrard sandstone, Campbell, No. 128.

## Geologic Formations Described—Continued.

Gatun beds, Dall, No. 186.  
 Gatun formation, Hill, No. 352.  
 Genesee shale, Blatchley, No. 88.  
 Genesee shale, Blatchley and Ashley, No. 92.  
 Genesee shale, Girty, No. 299.  
 Genesee shale, Grabau, No. 312.  
 Genesee shale, Lincoln, No. 490.  
 Genesee slate, Bishop, No. 80.  
 Genesee slate, Luther, No. 505.  
 Giles formation, Campbell, No. 127.  
 Girardeau limestone, Keyes, No. 415.  
 Glen Rose formation, Hill and Vaughan, No. 357.  
 Golden Gate series, Fairbanks, No. 262.  
 Golden Gate series, Turner, No. 777.  
 Goniatite limestone, Luther, No. 505.  
 Goshen schist, Emerson, No. 258.  
 Granby tuff, Emerson, No. 258.  
 Grand Rapids sandstone, Tyrrell, No. 786.  
 Grand Tower limestone, Keyes, 415.  
 Graydon sandstone, Shepard, No. 698.  
 Greenbrier limestone, Campbell, No. 127.  
 Greenleaf sandstone, Gould, No. 308.  
 Greggs Landing, Harris, No. 334.  
 Guallava beds, Hill, No. 352.  
 Gunnison formation, Spurr, No. 739a.  
 Gwynedd shale, Lyman, No. 507.  
 Hamilton, Blatchley and Ashley, No. 92.  
 Hamilton, Ries, Nos. 658, 659.  
 Hamilton group, Bishop, No. 80.  
 Hamilton group, Luther, No. 505.  
 Hamilton series, Prosser, No. 642.  
 Hamilton shale, Bishop, No. 80.  
 Hamilton shale, Grabau, No. 312.  
 Hamilton shale, Lincoln, No. 490.  
 Hampden diabase, Emerson, No. 258.  
 Hannibal shale, Shepard, No. 698.  
 Hardistonville quartzite, Wolff and Brooks, No. 931.  
 Harrison diorite, Merrill, No. 548.  
 Hatchetigbee, Harris, No. 334.  
 Hawley schist, Emerson, No. 258.  
 Hazlet sand, Clark, No. 152.  
 Henrietta limestone, Keyes, No. 435.  
 Henrietta limestone, Marbut, Nos. 517, 518, 519, 520.  
 Highbridge limestone, Campbell, No. 128.  
 Hinton formation, Campbell, No. 127.  
 Holyoke diabase, Emerson, No. 258.  
 Hoosac schist, Emerson, No. 258.  
 Honaker limestone, Campbell, No. 127.  
 Howard limestone, Haworth, No. 335.  
 Hudson River, Bell, No. 68.  
 Hudson River, Blatchley and Ashley, No. 92.  
 Hudson River, Ries, No. 658.  
 Hudson shale, Keyes, No. 415.  
 Huerfano series, Osborn, No. 585.  
 Huronian, Bell, No. 68.  
 Huronian, Coleman, No. 161.  
 Huronian, Ells, No. 253.  
 Illinoian till, Leverett, Nos. 487, 488.  
 Independence limestone, Haworth, No. 335.  
 Independence shale, Calvin, No. 124.  
 Inwood limestone, Merrill, No. 548.  
 Iola limestone, Haworth, No. 335.

## Geologic Formations Described—Continued.

Iola limestone, Keyes, No. 424.  
 Iowa, Calvin, No. 124.  
 Iowan, Beyer, No. 76.  
 Iowan, Calvin, No. 123.  
 Iowan drift, Calvin, Nos. 120, 121.  
 Iowan loess, Bain, No. 34.  
 Iowan loess, Leverett, No. 487.  
 Iowan loess, Pilsbry, No. 628.  
 Irvine formation, Campbell, No. 128.  
 Ithaca group, Clarke, No. 155.  
 Jennings shale, Spencer, No. 723.  
 Jordan sandstone, Berkey, No. 74.  
 Kansan, Bain, No. 40.  
 Kansan, Beyer, No. 76.  
 Kansan, Calvin, No. 123.  
 Kansan, Fitzpatrick, No. 272.  
 Kansan drift, Bain, Nos. 33, 34, 36.  
 Kansan drift, Calvin, Nos. 120, 121.  
 Kansan drift, Tilton and Bain, No. 766.  
 Kansan drift, Williams, No. 886.  
 Kansan drift, Leonard, No. 483.  
 Kansas, Calvin, No. 124.  
 Kansas till, Leverett, No. 488.  
 Kawishiwin, Winchell, No. 918.  
 Keewatin, Coleman, No. 161.  
 Keewatin, Winchell, No. 918.  
 Kenai series, Emmens, No. 260.  
 Keokuk group, Broadhead, No. 107.  
 Keweenawan series, Elftman, No. 250.  
 Keweenawan series, Wadsworth, No. 839.  
 Kimberling shale, Campbell, No. 127.  
 Kinderhook, Beyer, No. 76.  
 Kinderhook, Calvin, No. 121.  
 Kinderhook limestone, Marbut, No. 518.  
 King limestone, Shepard, No. 698.  
 Kiowa shale, Gould, No. 308.  
 Kirby clays, Gould, No. 308.  
 Knobstone, Jones, No. 396.  
 Knobstone group, Bennett, No. 72.  
 Knobstone group, Newsom, No. 576.  
 Knobstone group, Price, No. 641.  
 Knox dolomite, Campbell, No. 127.  
 Knoxville beds, Fairbanks, No. 262.  
 Kome series, White and Schuchert, No. 872.  
 Labette shale, Crane, No. 167.  
 Labette shales, Haworth, No. 335.  
 Lafayette formation, Spencer, No. 726.  
 Lafayette series, Spencer, No. 730.  
 La Motte sandstone, Keyes, No. 415.  
 Lane shales, Haworth, No. 335.  
 Lansdale shale, Lyman, No. 507.  
 Laramie, Todd, No. 770.  
 Laramie formation, Spurr, No. 739a.  
 Laurel limestone, Foerste, No. 273.  
 Laurentian, Bell, No. 68.  
 Laurentian, Coleman, No. 161.  
 Laurentian, Ells, No. 253.  
 Laurentian, Low, No. 500.  
 Lawrence shale, Crane, No. 167.  
 Lawrence shale, Haworth, No. 335.  
 Lawrence shale, Keyes, No. 424.  
 Layton formation, Spencer, No. 730.  
 Leadville limestone, Emmons, No. 259.  
 Leadville limestone, Spurr, No. 739a.  
 Le Claire limestone, Calvin, No. 120.

## Geologic Formations Described—Continued.

Lecompton shale, Haworth, No. 335.  
 Leda clay, Wilson, No. 912.  
 Lee formation, Campbell, Nos. 128, 129.  
 Le Grand beds, Beyer, No. 76.  
 Leona formation, Hill & Vaughan, No. 357.  
 Le Scur limestone, Keyes, No. 415.  
 Lewistown limestone, Spencer, No. 723.  
 Lexington limestone, Campbell, No. 128.  
 Leyden argillite, Emerson, No. 258.  
 Lignitic stage, Harris, No. 334.  
 Liguanea formation, Spencer, No. 730.  
 Limon beds, Hill, No. 352.  
 Lime Creek shale, Calvin, No. 121.  
 Lincoln porphyry, Emmons, No. 259.  
 Lockatong series, Kümmel, No. 456.  
 Loess, Bain, Nos. 35, 36.  
 Loess, Calvin, Nos. 120, 124.  
 Loess, Keyes, No. 428.  
 Loess, Leonard, No. 483.  
 Loess, Sardeson, No. 687.  
 Loess, Shimek, No. 700.  
 Loess, Tilton and Bain, No. 766.  
 Loess, Todd, No. 768.  
 Loess, Udden, Nos. 788, 792.  
 Longmeadow sandstone, Emerson, No. 258.  
 Louisiana limestone, Keyes, No. 431.  
 Louisiana limestone, Shepard, No. 698.  
 Louisville limestone, Foerste, No. 273.  
 Loup Fork beds, Todd, Nos. 770, 773.  
 Lower Helderberg, Blatchley, No. 88.  
 Lower Helderberg, Blatchley and Ashley, No. 92.  
 Lower Helderberg, Ries, No. 658.  
 Lower Helderberg group, Lincoln, No. 490.  
 Lower Helderberg group, Luther, No. 505.  
 Lowerre quartzite, Merrill, No. 548.  
 McAlister coal group, White, No. 871.  
 McCune limestone, Keyes, No. 431.  
 McHenry formation, Uhler, No. 794.  
 McNulty rhyolite, Emmons, No. 259.  
 Madison limestone, Griswold, No. 321.  
 Magnesian limestone, Blatchley and Ashley, No. 92.  
 Magnesian limestone, Keyes, No. 415.  
 Magnesian limestone, Marbut, No. 518.  
 Magnesian limestone, Shepard, No. 698.  
 Manasquan formation, Clark, No. 152.  
 Manhattan schist, Merrill, No. 548.  
 Maquoketa shale, Calvin, No. 123.  
 Marble Island quartzite, Tyrrell, No. 784.  
 Marcellus, Ries, Nos. 658, 659.  
 Marcellus shale, Bishop, No. 80.  
 Marcellus shale, Grabau, No. 312.  
 Marcellus shale, Lincoln, No. 490.  
 Marcellus shale, Luther, No. 505.  
 Marcellus shale, Prosser, No. 642.  
 Maroon formation, Emmons, No. 259.  
 Maroon formation, Spurr, No. 739a.  
 Marshalltown shale, Beyer, No. 76.  
 Martinsburg shale, Spencer, No. 723.  
 Massanutten sandstone, Spencer, No. 723.  
 Mata Chin formation, Hill, No. 352.  
 Matanzas series, Spencer, No. 730.  
 Matawan formation, Clark, No. 152.  
 Maxville limestone, Weller, No. 860.

## Geologic Formations Described—Continued.

Medicine beds, Gould, No. 308.  
 Medina, Ries, No. 658.  
 Mentor beds, Jones, No. 395.  
 Merced formation, Turner, No. 777.  
 Merced series, Merriam, No. 545.  
 Merom sandstone, Blatchley and Ashley, No. 92.  
 Middlefield granitite, Emerson, No. 258.  
 Mission Creek series, Emmons, No. 260.  
 Mississippian series, Beyer, No. 76.  
 Mississippian series, Campbell, No. 129.  
 Mississippian series, Keyes, Nos. 415, 423, 425, 430, 435.  
 Mississippian series, Shepard, No. 698.  
 Mississippian series, Weller, Nos. 860, 867.  
 Missourian, Bain, Nos. 34, 36, 39.  
 Missourian, Keyes, No. 435.  
 Missourian, Leonard, No. 483.  
 Missourian formation, Tilton and Bain, No. 766.  
 Missourian series, Keyes, Nos. 415, 418, 424.  
 Missouri stage, Marbut, No. 520.  
 Moberly sandstone, Marbut, No. 521.  
 Moccasin limestone, Campbell, No. 127.  
 Monkey Hill beds, Dall, No. 186.  
 Monkey Hill beds, Hill, No. 352.  
 Monmouth formation, Clark, No. 152.  
 Monroe shale, Ries, No. 658.  
 Montana formation, Spurr, No. 739a.  
 Montana formation, Todd, No. 773.  
 Monterey series, Fairbanks, No. 262.  
 Monterey sandstone, Spencer, No. 723.  
 Moscow shale, Grabau, No. 312.  
 Mount Laurel sand, Clark, No. 152.  
 Mount Toby conglomerate, Emerson, No. 258.  
 Mundi Hill beds, Dall, No. 186.  
 Mundi Hill beds, Hill, No. 352.  
 Mound Valley shale, Haworth, No. 335.  
 Myrtle formation, Diller, No. 235.  
 Manafalia, Harris, No. 334.  
 Naples shale, Grabau, No. 312.  
 Nashaquitsa series, Shaler, No. 695.  
 Navesink marl, Clark, No. 152.  
 Neeleytown limestone, Ries, No. 658.  
 Neocene, Darton, No. 194.  
 Neocene, Merriam, No. 545.  
 New Albany shale, Blatchley and Ashley, No. 92.  
 Newark system, Kümmel, No. 456.  
 Newman limestone, Campbell, Nos. 128, 129.  
 New Rochelle serpentine, Merrill, No. 549.  
 Niagara, Bell, No. 68.  
 Niagara, Blatchley, No. 88.  
 Niagara, Ries, No. 659.  
 Niagara limestone, Blatchley and Ashley, No. 92.  
 Niagara limestone, Calvin, No. 124.  
 Niagara limestone, Foerste, No. 273.  
 Niagara limestone, Luther, No. 505.  
 Niobrara, Bain, No. 37.  
 Niobrara, Darton, No. 194.  
 Noix oolite, Keyes, No. 431.  
 Nolichucky shale, Campbell, No. 127.  
 Norristown shale, Lyman, No. 507.  
 Oakland limestone lentils, Diller, No. 235.

## Geologic Formations Described—Continued.

Ocoya Creek formation, Blake, No. 81.  
 Oneonta sandstone, Clarke, No. 155.  
 Onondaga, Ries, No. 658.  
 Onondaga limestone, Bishop, No. 80.  
 Onondaga limestone, Prosser, No. 642.  
 Oread limestone, Haworth, No. 335.  
 Oread limestone, Wilson, No. 911.  
 Oriskany, Ries, No. 658.  
 Oriskany sandstone, Lincoln, No. 490.  
 Oriskany sandstone, Luther, No. 505.  
 Orting gravel, Willis, No. 896.  
 Osage, Keyes, Nos. 423, 425.  
 Osage, Weller, Nos. 864, 867.  
 Osage City shale, Beede, No. 65.  
 Osage series, Broadhead, No. 107.  
 Osage shale, Crane, No. 167.  
 Osage shale, Haworth, No. 335.  
 Osceola till and clay, Willis, No. 896.  
 Osgood limestone, Foerste, No. 273.  
 Oswegatchie series, Smith, No. 718.  
 Oswego limestone, Haworth, No. 335.  
 Ozark, Keyes, No. 423.  
 Ozark series, Broadhead, Nos. 107, 108.  
 Panama formation, Hill, No. 352.  
 Panola formation, Campbell, Nos. 128, 129.  
 Parting quartzite series, Spurr, No. 739a.  
 Paso Robles formation, Fairbanks, No. 262.  
 Patoot series, White and Schuchert, No. 872.  
 Pawnee limestone, Haworth, No. 335.  
 Payette formation, Lindgren, Nos. 491, 492.  
 Pelican sandstone and shale, Tyrrell, No. 786.  
 Pennington shale, Campbell, Nos. 128, 129.  
 Pennsylvanian series, Beyer, No. 76.  
 Pennsylvanian series, Campbell, No. 129.  
 Pensauken formation, Salisbury, No. 682.  
 Perkasie shale, Lyman, No. 507.  
 Perry limestone, Keyes, No. 415.  
 Phelps sandstone, Shepard, No. 698.  
 Pierre, Darton, No. 194.  
 Platte shale, Keyes, No. 424.  
 Plattsburg limestone, Keyes, No. 424.  
 Plattsburgh limestone, Keyes, No. 424.  
 Pleasanton shale, Bain, No. 36.  
 Pleasanton shale, Crane, No. 167.  
 Pleasanton shale, Haworth, No. 335.  
 Pleasanton shale, Keyes, No. 435.  
 Pleasanton shale, Marbut, Nos. 517, 519, 520.  
 Pocahontas formation, Campbell, No. 127.  
 Poison Canyon beds, Osborn, No. 585.  
 Portage group, Bishop, No. 80.  
 Portage group, Clarke, Nos. 154, 155.  
 Portage group, Lincoln, No. 490.  
 Portage sandstone, Luther, No. 504.  
 Portage shale, Luther, No. 505.  
 Poteau group, Drake, No. 239.  
 Potsdam, Blatchley and Ashley, No. 92.  
 Potsdam, Cushing, No. 182.  
 Potsdam, Ells, No. 256.  
 Potsdam, Wadsworth, No. 839.  
 Pottstown shale, Lyman, No. 507.  
 Pre-Kansan drift, Bain, Nos. 33, 40.  
 Price sandstone, Campbell, No. 127.  
 Princeton conglomerate, Campbell, No. 127.  
 Puget formation, Willis, Nos. 894, 895.  
 Puyallup Glacial epoch, Willis, No. 896.

## Geologic Formations Described—Continued.

Puyallup sands, Willis, No. 896.  
 Quail porphyry, Emmons, No. 259.  
 Raccoon River beds, Bain and Leonard, No. 45.  
 Raleigh limestone, Campbell, No. 127.  
 Rampart series, Emmons, No. 260.  
 Rancocas formation, Clark, No. 152.  
 Redbank sand, Clark, No. 152.  
 Red beds, Beede, No. 67.  
 Red beds, Williston, No. 904.  
 Reeder sandstone, Gould, No. 308.  
 Richmond shale, Campbell, No. 128.  
 Rio Grande gravel, Herrick, No. 340.  
 Rio Grande loess, Herrick, No. 340.  
 Rockcastle conglomerate lentil, Campbell, Nos. 128, 129.  
 Rockville conglomerate, Calvin, No. 123.  
 Rockwood formation, Campbell, No. 127.  
 Rockwood formation, Spencer, No. 723.  
 Romney shale, Campbell, No. 127.  
 Romney shale, Spencer, No. 723.  
 Rossville shale and sandstone, Beede, No. 65.  
 Rowe schist, Emerson, No. 258.  
 Russell formation, Campbell, No. 127.  
 St. Lawrence shale, Berkey, No. 74.  
 St. Louis, Beyer, No. 76.  
 St. Peters sandstone, Blatchley and Ashley, No. 92.  
 Sac limestone, Shepard, No. 698.  
 Salina, Ries, No. 659.  
 Salina group, Bishop, No. 80.  
 Salina group, Lincoln, No. 490.  
 Salina group, Luther, No. 505.  
 Sandstone, first, Shepard, No. 698.  
 Sandstone, second, Shepard, No. 698.  
 Sangamon zone, Leverett, No. 487.  
 San Miguel beds, Hill, No. 352.  
 San Miguel formation, Purington, No. 644.  
 San Pablo formation, Fairbanks, No. 262.  
 San Pablo formation, Knowlton, No. 451.  
 San Pablo formation, Merriam, Nos. 545, 546.  
 San Pablo formation, Turner, No. 777.  
 Sault Ste. Marie sandstone, Bell, No. 70.  
 Savoy schist, Emerson, No. 258.  
 Sawatch quartzite, Emmons, No. 259.  
 Saxicava sand, Wilson, No. 912.  
 Sequoia formation, Campbell, No. 127.  
 Severy shale, Haworth, No. 335.  
 Sevier shale, Campbell, No. 127.  
 Sewell marls, Clark, No. 152.  
 Shark River formation, Clark, No. 152.  
 Shenandoah limestone, Spencer, No. 723.  
 Shunganunga shale, Beede, No. 65.  
 Silver Lake shale, Beede, No. 65.  
 Skunnemunk formation, Ries, No. 658.  
 Soldier Creek shale, Beede, No. 65.  
 Spring Creek clays, Gould, No. 308.  
 Spring rock, Beede, No. 65.  
 Stanton limestone, Beede, No. 65.  
 Staten Island serpentine, Merrill, No. 549.  
 State Quarry limestone, Calvin, No. 120.  
 Stockton series, Kümmel, No. 456.  
 Styliolus limestone, Grabau, No. 312.  
 Sub-Aftonian, Calvin, No. 123.  
 Sub-Aftonian stage, Beyer, No. 76.  
 Sugarloaf arkose, Emerson, No. 258.

## Geologic Formations Described—Continued.

Superjacent series, Turner, No. 776.  
 Tahkandit series, Emmons, No. 260.  
 Talcott diabase, Emerson, No. 258.  
 Tar sands, Tyrrell, No. 786.  
 Tecumseh shale, Beede, No. 65.  
 Tellowa formation, Campbell, No. 127.  
 Thayer shale, Haworth, No. 335.  
 Thayer shale, Keyes, No. 424.  
 Topeka limestone, Beede, No. 65.  
 Topeka limestone, Haworth, No. 335.  
 Toronto formation, Leverett, No. 485.  
 Trenton, Bell, No. 68.  
 Trenton, Ells, No. 256.  
 Trenton, Keyes, No. 415.  
 Trenton, Ries, No. 658.  
 Trenton limestone, Blatchley and Ashley, No. 92.  
 Trenton limestone, Cushing, No. 182.  
 Truro series, Shaler, No. 695.  
 Tully limestone, Lincoln, No. 490.  
 Tully limestone, Luther, No. 505.  
 Tyee sandstone, Diller, No. 235.  
 Uinta formation, Scott, No. 692.  
 Umpqua formation, Diller, No. 235.  
 Upper Helderberg group, Bishop, No. 80.  
 Upper Helderberg group, Luther, No. 505.  
 Utica, Bell, No. 68.  
 Utica, Ells, No. 256.  
 Utica shale, Blatchley and Ashley, No. 92.  
 Utica slate, Cushing, No. 182.  
 Utley metarhyolite, Weidman, No. 857a.  
 Uvalde formation, Hill and Vaughan, No. 357.  
 Vashon glacial epoch, Willis, No. 896.  
 Vilas shale, Haworth, No. 335.  
 Vincentown lime sands, Clark, No. 152.  
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*rotundiloba* Newb. (?), Hollick, No. 368.  
*towneri* Lesq. (?), Hollick, No. 370.  
*Araucaria spatulata* Newb., Newberry, No. 573a.  
*Araucarites ovatus* n. sp., Hollick, No. 370.  
*Arca aquila* Heilprin, Dall, No. 184.  
*bordeniana* n. sp., Dall, No. 184.  
*carolinensis* Wagner, Dall, No. 185.  
*hatchetigbeensis* n. sp., Harris, No. 334.  
*occidentalis* Phillips, Dall, No. 184.  
*paratina* n. sp., Dall, No. 184.  
*triloba* Newb., Newberry, No. 573a.  
*umbonata* Lamarck, Dall, No. 184.  
*virginiae* Wagner, Dall, No. 185.  
*wagneriana* Dall, Dall, No. 184.  
 (Barbatia) (Gray) Adams, Dall, No. 184.  
 (Linné) Lamarck, Dall, No. 184.  
 (Lunarea) (Gray) Adams, Dall, No. 184.  
 (Noetia) Gray, Dall, No. 184.  
     *incile* Say, Dall, No. 184.  
     *limula* Conrad, Dall, No. 184.  
     *limula* var. *platyura*, Dall, No. 184.  
     var. *filosa* Conrad, Dall, No. 184.  
     *ponderosa* Say, Dall, No. 184.  
 (Scapharca) (Gray), Dall, No. 184.  
*Archægosaurus*, Case, No. 134.  
*Archæopteryx*, Case, No. 136.  
*Archimedes*, Simpson, No. 702.  
*Archimediopora*, Simpson, No. 702.  
*Arisæma* (?) *duhia* n. sp., Hollick, No. 370.  
     (?) *mattewanense* n. sp., Hollick, No. 370.  
*Aristolochia cordifolia*, Newb., Newberry, No. 573a.  
*Arthroclema*, Simpson, No. 702.  
*Arthrodira*, Case, No. 133.  
*Arthropora*, Simpson, No. 702.  
*Arthrostylus*, Simpson, No. 702.  
*Ascodictyum*, Simpson, No. 702.  
*Aspidium kennerlyi* Newb., Newberry, No. 573a.  
*Aspidopora*, Simpson, No. 702.  
*Aspidorhynchus*, Case, No. 133.  
*Astarte smithvillensis* var., Harris, No. 334.  
*Astroptychius gracilis* Newb., Newberry, No. 573.  
*Atactodea* Dall, Dall, No. 184.  
*Atactopora*, Simpson, No. 702.  
*Atactoporella*, Simpson, No. 702.  
*Athyris densa*, Hall and Clarke, No. 327.  
     *subquadrata* Hall, Weller, No. 860.  
*Atrina argentea* Conrad, Dall, No. 184.  
     *harrisi* n. sp., Dall, No. 184.  
     *jacksoniana* n. sp., Dall, No. 184.  
     *rigida* Dillwyn, Dall, No. 184.  
     *serrata* Sowerby, Dall, No. 184.  
 (Argentea ?) *chipolana* n. sp. ?, Dall, No. 184.  
*Atrypina clintoni*, Hall and Clarke, No. 327.  
*Aulopora anna* n. sp., Beede, No. 61.  
     *prosseri* n. sp., Beede, No. 61.  
     *subtenuis* Hall, Girty, No. 300.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Avicula gastrodes* Meek, Logan, No. 498.  
     sp., Harris, No. 334.  
*Aviculopecten batesvillensis* n. sp., Weller, No. 860.  
     *rectilaterarius* Cox, Drake, No. 239.  
     ?, sp., Weller, No. 860.  
*Bactropora*, Simpson, No. 702.  
*Baculites nodosus* var. *brevis* Meek, Logan, No. 498.  
     *ovatus* Say, Logan No. 498.  
*Banksia pusilla* Vel., Hollick, No. 370.  
*Baptosaurus*, Williston, No. 902.  
     *onchognathus*, Williston, No. 902.  
*Barbatia ceculoides* var., Harris, No. 334.  
     (Acar) *reticulata* Gmelin, Dall, No. 184.  
     (Calloarca) *arcula* Heilprin Dall, No. 184.  
     *candida* Gmelin, Dall, No. 184.  
     *ceculoides* Conrad, Dall, No. 184.  
     *irregularis* n. sp., Dall, No. 184.  
     *marylandica* Conrad, Dall, No. 184.  
     *phalacra* n. sp., Dall, No. 184.  
     (Cucullaria) *aldrichi* n. sp., Dall, No. 184.  
     *tæniata* n. sp., Dall, No. 184.  
 (Fossilarca) *adamsi* (Shuttleworth) Smith, Dall, No. 184.  
     *ovalina* n. sp., Dall, No. 184.  
 (Granoarca) *propatula* Conrad, Dall, No. 184.  
     *virginiae* Wagner, Dall, No. 184.  
 (Striarca) *centenaria* Say, Dall, No. 184.  
*Barnea* (Leach MS.) Risso, Dall, No. 184.  
     *truncata* Say, Dall, No. 184.  
 (Scobina) *arcuata* Conrad, Dall, No. 184.  
     *costata* Linné, Dall, No. 184.  
*Barrandeoceras subcostulatum* nom. prov., Whiteaves, No. 875.  
*Barrendella areyi*, Hall and Clarke, No. 327.  
*Bathyuriscus senectus* Billings sp., Matthew, No. 535.  
*Batostoma*, Simpson, No. 702.  
*Beecheria davidsoni*, Hall and Clarke, No. 327.  
*Belemnacanthus giganteus* n. sp., Eastman No. 246.  
*Belemnitella baculus* n. sp., Logan, No. 498.  
*Bellerophon sublavis* Hall, Weller, No. 860.  
     *branneri* n. sp., Weller, No. 860.  
*Belodon*, Case, No. 135.  
*Berberis simplex* Newb., Newberry, No. 573a.  
*Berenicca*, Simpson, No. 702.  
*Bernissartia*, Case, No. 135.  
*Beryx* ? Cuvier, Stewart, No. 748.  
     *multidentatus* n. sp., Stewart, No. 748.  
     *polymicrodus* n. sp., Stewart, No. 748.  
*Betula angustifolia* Newb., Newberry, No. 573a.  
     *heterodonta* Newb., Newberry, No. 573a.  
     sp. ? Newberry, No. 573a.  
*Bison alaskensis* Rhoads, Rhoads, No. 651.  
     *allenii* Marsh, Rhoads, No. 651.  
     *antiquus* Leidy, Rhoads, No. 651.  
     *latifrons* Blake, No. 84.  
     *latifrons*, (Harlan), Rhoads, No. 651.  
     *scaphoceras* (Cope), Rhoads, No. 651.  
     sp. ?, Rhoads, No. 651.

## Paleontology—Continued.

*Genera and species described*—Continued.

Bolivina punctata d'Orbigny, Bagg, No. 27.  
 textilaroides Ruess, Bagg, No. 27.

Bos, Blake, No. 83.  
 arizonica, Blake, No. 84.

Botryllopora, Simpson, No. 702.

Brachysaurus, Williston, No. 902.  
 overtoni, Williston, No. 902.

Branchiosaurus, Case, No. 134.

Brasenia (?) antiqua Newb., Newberry, No. 573a.

Brooksella Walcott, Walcott, No. 844.  
 alternata Walcott, Walcott, No. 844.  
 confusa Walcott, Walcott, No. 844.

Bronteus senescens Clarke, Clarke, No. 156.

Brontosaurus, Case, No. 135.

Bulimina aculeata, Bagg, No. 27.  
 buchiana, Bagg, No. 27.  
 elongata, Bagg, No. 27.  
 puschi Reuss, Bagg, No. 27.  
 variabilis d'Orbigny, Bagg, No. 27.

Bunomeryx montanus n. gen. et sp., Wortman, No. 935.  
 elegans, n. sp., Wortman, No. 935.

Bythopora, Simpson, No. 702.

Cabomba (?) gracilis Newb., Newberry, No. 573a.

inermis (Newb.) Hollick, Newberry, No. 573a.

Cæcella Gray, Dall, No. 184.

Calcytes polysepala Newb., Newberry, No. 573a.

Callista (Aphrodina) tenuis H. & M., Logan, No. 498.

Callopora, Simpson, No. 702.

Callotrypa, Simpson, No. 702.

Camarasaurus, Osborn, No. 590.  
 (Atlantosaurus), Case, No. 135.

Camarophoria rhomboidalis, Hall and Clarke, No. 327.

Camelomeryx n. gen., Scott, No. 692.  
 longiceps n. sp., Scott, No. 692.

Camelops Leidy, Wortman, No. 935.  
 americanus n. sp., Wortman, No. 935.  
 kansanus Leidy, Wortman, No. 935.  
 vitikerianus Cope, Wortman, No. 935.

Campophyllum torquium Owen, Beede, No. 63.

Cancellaria annosa n. sp., Aldrich, No. 12.  
 antiqua Wagner, Dall, No. 185.  
 graciloides n. sp., Aldrich, No. 12.  
 var. bella n. var., Aldrich, No. 12.

Capellinia mira, Hall and Clarke, No. 327.

Capitosaurus, Case, No. 134.

Cardium hatchetigbeense, Harris, No. 334.  
 ingens Wagner, Dall, No. 185.  
 tuomeyi, Harris, No. 334.

Carolia Cantraine, Dall, No. 184.

Carolia (Carolia) jamaicensis n. sp., Dall, No. 184.  
 (Wakullina) floridana Dall, Dall, No. 184.

Carpinus grandis Ung., Newberry, No. 573a.

Carpolithes spinosus Newb., Newberry, No. 573a.

lineatus Newb., Newberry, No. 573a.

## Paleontology—Continued.

*Genera and species described*—Continued.

Carpolithus drupæformis n. sp., Hollick, No. 370.

Carya antiquum Newb., Newberry, No. 573a.

Cassia sp. ?, Newberry, No. 573a.

Celastrophyllum newberryanum Hollick, Hollick, No. 370.

Celastrus arctica Heer, Hollick, No. 367.

Cephalaspidae, Case, No. 133.

Ceramella, Simpson, No. 702.

Ceramopora, Simpson, No. 702.

Ceramoporella, Simpson, No. 702.

Ceratodus americanus n. sp., Knight, No. 445.  
 robustus n. sp., Knight, No. 445.

Ceratosaurus, Case, No. 135.

Ceriocrinus nodulifera n. sp., Butts, No. 116.

Cetiosaurus, Case, No. 135.

Chama agassizii Wagner, Dall, No. 185.

Champsosaurus, Case, No. 135.

Cheilocephalus n. gen., Berkey, No. 74.  
 st. croixensis n. sp., Berkey, No. 74.

Chelydosaurus, Case, No. 134.

Chiloporella, Simpson, No. 702.

Chilotrypa, Simpson, No. 702.

Chlamys choctavensis, Harris, No. 334.  
 greggi n. sp., Harris, No. 334.

Chondrenchelys, Case, No. 133.

Chonostrophia helderbergia, Hall and Clarke, No. 327.

Christinia subquadratus, Hall and Clarke, No. 327.

Cimoliosaurus, Case, No. 135.

Cinnamomum heerii Lesq., Newberry, No. 573a.

Cladochonus benetti n. sp., Beede, No. 61.

Cladodus mortifer N. & W., Newberry, No. 573.  
 splendens Newb., Newberry, No. 573.

Cladopora clarkei n. sp., Girty, No. 300.  
 halli n. sp., Girty, No. 300.

Cladoselache, Case, No. 133.

Claosaurus, Case, No. 135.  
 annexans Marsh, Williston, No. 902.

Clathrodictyon jewetti, n. sp., Girty, No. 300.

Clathropora, Simpson, No. 702.

Clavulina communis d'Orbigny, Bagg, No. 27.  
 parisiensis d'Orbigny, Bagg, No. 27.

Clepsydrope Cope, Williston, No. 904.

Clidastes, Williston, No. 902.  
 cinerarium, Williston, No. 902.

Iiodontus, Williston, No. 902.  
 stenops, Williston, No. 902.

tortor, Williston, No. 902.  
 velox, Williston, No. 902.

westii, Williston, No. 902.

wymani, Williston, No. 902.

Climatius, Case, No. 133.

Clintonella vagabunda, Hall and Clarke, No. 327.

Clonopora, Simpson, No. 702.

Coccosteus, Case, No. 133.

Coelacanthus, Case, No. 133.

Coelocaulis, Simpson, No. 702.

Coelococonus, Simpson, No. 702.

Coelurus, Case, No. 135.

Colosteus, Case, No. 134.

## Paleontology—Continued.

*Genera and species described*—Continued. —

*Compsemys*, Case, No. 135.

*Conchidium crassiplicata*, Hall and Clarke, No. 327.

*exponens*, Hall and Clarke, No. 327.

*georgiae*, Hall and Clarke, No. 327.

*greenii*, Hall and Clarke, No. 327.

*nettelrothi*, Hall and Clarke, No. 327.

*obsoletum*, Hall and Clarke, No. 327.

*scoparium*, Hall and Clarke, No. 327.

*Congeria lamellata* n. sp., Dall, No. 184.

*leucophæata* Conrad, Dall, No. 184.

*Conocephalites miser* Billings, Matthew, No. 535.

*Conocoryphe pustulosa* n. sp., Matthew, No. 535.

*Conularia gracilis* Hall, Ruedemann, No. 672.

*Coralliphaga prima* n. sp., Harris, No. 334.

  (*Oryctomya*) *claibornensis* Dall, Dall, No. 189.

*Corbicula cornelliana* n. sp., Harris, No. 334.

*Corbula* (*Bruruiere*) Lamarck, Dall, No. 184.

*alabamensis* var. Harris, No. 334.

*aldrichi*, Harris, No. 334.

*concha*, Harris, No. 334.

  (*Alloidis*) *caloosæ* n. sp., Dall, No. 184.

*elevata* Conrad, Dall, No. 184.

*engonata* var. *burnsii* Dall, Dall, No. 184.

*fossata* Aldrich, Dall, No. 184.

      var. ? *extenuata* Dall, Dall, No. 184.

*heterogenea* Guppy, Dall, No. 184.

*milium* n. sp., Dall, No. 184.

*oniscus* Conrad, Dall, No. 184.

*perdubia* de Gregorio, Dall, No. 184.

*texana* Gabb, Dall, No. 184.

*vieta* Guppy, Dall, No. 184.

*walesiana* Harris, Dall, No. 184.

(*Bothrocmbula*) *radiatula* n. sp., Dall, No. 184.

*synarmostes* n. sp., Dall, No. 184.

*viminea* Guppy, Dall, No. 184.

*willcoxii* n. sp., Dall, No. 184.

(*Corbulamella*) Meek and Worthen? Dall, No. 184.

(*Cuneocorbula*) *alabamensis* Lea, Dall, No. 184.

*aldrichi* Meyer, Dall, No. 184.

*barrattiana* C. B. Adams, Dall, No. 184.

*compressa* Lea, Dall, No. 184.

*contracta* Say, Dall, No. 184.

*cuneata* Say, Dall, No. 184.

*densata* Conrad, Dall, No. 184.

*inæqualis* Say, Dall, No. 184.

*sarda* n. sp., Dall, No. 184.

*seminella* n. sp., Dall, No. 184.

*sericea* n. sp., Dall, No. 184.

*sphenia* n. sp., Dall, No. 184.

*swiftiana* C. B. Adams, Dall, No. 184.

*whitfieldi* n. sp., Dall, No. 184.

*Cornus newberryi* Hollick, Newberry, No. 573a.

*Corylus americana* fossilis Newb., Newberry, No. 573a.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Corylus macquarrii* (Forbes) Heer, Newberry, No. 573a.

*orbiculata* Newb., Newberry, No. 573a.

*rostrata* fossilis Newb., Newberry, No. 573a.

*Coryphodon cinctus* Cope, Osborn, No. 589.

*curvicristis* Cope, Osborn, No. 589.

*cuspidatus* Cope, Osborn, No. 589.

*elephantopos* Cope, Osborn, No. 589.

*hamatus* Marsh, Osborn, No. 589.

*latidens* Cope, Osborn, No. 589.

*lobatus* Cope, Osborn, No. 589.

*marginatus* Cope, Osborn, No. 589.

*radians*, Osborn, Nos. 587, 589, 594.

*repandus* Cope, Osborn, No. 589.

*singularis* n. sp., Osborn, No. 589.

*testis*, Osborn, No. 589.

*ventanus* n. sp., Osborn, No. 589.

*wortmani*, n. sp., Osborn, No. 589.

  (*Metalophodon*) *armatus*, Osborn, No. 589.

*Coscinella*, Simpson, No. 702.

*Cosciniium*, Simpson, No. 702.

*Coscinotrypa*, Simpson, No. 702.

*Crania agaricana*, Hall and Clarke, No. 327.

*favincola*, Hall and Clarke, No. 327.

*granosa*, Hall and Clarke, No. 327.

*pulchella*, Hall and Clarke, No. 327.

*Craniella ulrichi*, Hall and Clarke, No. 327.

*Crassatella halei*, Harris, No. 334.

*tumidula*, Harris, No. 334.

*Cratægus flavescens* Newb., Newberry, No. 573a.

*Crenella*, Brown, Dall, No. 184.

*divaricata* Orbigny, Dall, No. 184.

*duplinensis* n. sp., Dall, No. 184.

*minuscula* n. sp., Dall, No. 184.

*Crepipora*, Simpson, No. 702.

*Cricoptus*, Williston, No. 904.

*Cricotus*, Case, No. 134.

*Crisinella*, Simpson, No. 702.

*Cristellaria acutauricularis* (Fichtel and Moll), Bagg, No. 27.

*articulata* (Reuss), Bagg, No. 27.

*cassis* (Fichtel and Moll), Bagg, No. 27.

*crepidula* (Fichtel and Moll), Bagg, No. 27.

*cretacea* Bagg, Bagg, No. 27.

*cultrata*, Bagg, No. 27.

    (*Montfort*), Bagg, No. 27.

*gibba* d'Orbigny, Bagg, No. 27.

*italica* (Defrance), Bagg, No. 27.

*mamilligera* Karrer, Bagg, No. 27.

*megapolitana* Reuss, Bagg, No. 27.

*projecta* Bagg, Bagg, No. 27.

*radiata*, Bagg, No. 27.

*retulata*, Bagg, No. 27.

*rotilata* (Lamarck), Bagg, No. 27.

*secans* Reuss, Bagg, No. 27.

*trachyomphala* (Reuss), Bagg, No. 27.

*triangularis* d'Orbigny, Bagg, No. 27.

*wetherellii*, Bagg, No. 27.

    (*Jones*), Bagg, No. 27.

*Cryptonella subelliptica*, Hall and Clarke, No. 327.

## Paleontology—Continued.

*Genera and species described*—Continued.

Ctenacanthus depressus n. sp., Newberry, No. 573.

gurleyi n. sp., Newberry, No. 573.

Ctenodus fleischeri n. sp., Newberry, No. 573.

(Sagenodus) angustus n. sp., Newberry, No. 573.

Cucullae Lamarck, Dall, No. 184.

gigantea var., Harris, No. 334.

Cunninghamites elegans (Corda.) Endl., Hollick, No. 370.

squamosus Heer, Hollick, No. 370.

Cuspidaria prima, Harris, No. 334.

Cyamodus, Case, No. 135.

Cyclamina placenta, Bagg, No. 27.

Cyclopora, Simpson, No. 702.

Cycloporina, Simpson, No. 702.

Cynocercus, Williston, No. 902.

incisus, Williston, No. 902.

Cynodontia, Case, No. 135.

Cynognathus, Case, No. 135.

Cyrilla subgen., A. Adams, Dall, No. 184.

Cyrtia radians, Hall and Clarke, No. 327.

Cyrtina lachrymosa, Hall and Clarke, No. 327.

neogenes, Hall and Clarke, No. 327.

umbonata var. alpenensis, Hall and Clarke, No. 327.

Cyrtoceras quebecense n. sp., Whiteaves, No. 875.

Cyrtodaria siliqua Daudin, Dall, No. 184.

Cystodictya, Simpson, No. 702.

Cystopora, Simpson, No. 702.

Dactyliodus N. and W., Newberry, No. 573.

latus n. sp., Newberry, No. 573.

princeps N. and W., Newberry, No. 573.

rectus n. sp., Newberry, No. 573.

Dactyloidites asterooides Fitch, Walcott, No. 844.

Dammara (?) cliffwoodensis n. sp., Hollick, No. 370.

microlepis Heer (?), Hollick, No. 367.

Daptimus broadheadi n. sp., Stewart, No. 745.

Darina Gray, Dall, No. 184.

Davila Gray, Dall, No. 184.

Dekayella, Simpson, No. 702.

Dekayia, Simpson, No. 702.

Deltodus complanatus N. and W., Newberry, No. 573.

grandis N. and W., Newberry, No. 573.

inornatus n. sp., Newberry, No. 573.

spatulatus N. and W., Newberry, No. 573.

Derbya affinis, Hall and Clarke, No. 327.

bennetti, Hall and Clarke, No. 327.

(?) biloba, Hall and Clarke, No. 327.

broadheadi, Hall and Clarke, No. 327.

(?) costatula, Hall and Clarke, No. 327.

cymbula, Hall and Clarke, No. 327.

ruginosa, Hall and Clarke, No. 327.

Desmatochelys lowii, Williston, No. 902.

Deuterosaurus, Case, No. 135.

Dewalquea groenlandica Heer (?), Hollick, No. 368.

Diadactes, Case, No. 135.

Diademodon, Case, No. 135.

Diamesopora, Simpson, No. 702.

## Paleontology—Continued.

*Genera and species described*—Continued.

Dianulites, Simpson, No. 702.

Diastoporina, Simpson, No. 702.

Diceliocephalus, Owen, Berkey, No. 74.

misa Hall, Berkey, No. 74.

Dieranopora, Simpson, No. 702.

Dictyonema crassum n. sp., Girty, No. 300.

Dicynodon, Case, No. 135.

Dielasma obovatum, Hall and Clarke, No. 327.

turgida Hall var. elongata n. var., Weller, No. 860.

Dimorphodon, Case, No. 135.

Dimya grandis Dall, Dall, No. 184.

Dinichthys, Dean, No. 228.

intermedius Newberry, Eastman, No. 247.

pustulosus, Eastman, No. 247.

terrelli Newberry, Eastman, No. 247.

Dinictis major n. sp., Lucas, No. 501.

Dinornis, Case, No. 136.

Diospyros cuspidata n. sp., Kirchner, No. 442.

Diplodocus, Case, No. 135.

Diplodonta sp., Harris, No. 334.

Diplograptus McCoy, Ruedemann, No. 671.

pristis Hall, Ruedemann, No. 671.

ruedemannii Gurley, Ruedemann, No. 671.

Diplopora, Simpson, No. 702.

Diplurus, Case, No. 133.

Dipnoid, Case, No. 133.

Discophyllum peltatum Hall, Walcott, No. 844.

Discorbina bertheloti (d'Orbigny), Bagg, No. 27.

orbicularis, Bagg, No. 27.

Dolichometopus Angelin, Matthew, No. 535.

acadicus n. sp., Matthew, No. 535.

Dolichosoma, Case, No. 134.

Dorypyge Dames, Matthew, No. 535.

horrida n. sp., Matthew, No. 535.

parvula Billings, sp., Matthew, No. 535.

quadriiceps valida n. var., Matthew, No. 535.

wasatchensis var. acadica n. var., Matthew, No. 535.

Dosiniopsis lenticularis, Harris, No. 334.

Duncanella rufa, n. sp., Girty, No. 300.

Ectoconodon n. gen., Osborn, No. 589.

petersoni, n. sp., Osborn, No. 589.

Edestus lecontei n. sp., Dean, No. 229.

Elonichthys, Case, No. 133.

Empedias, Case, No. 135.

Eophyton Torell, Walcott, No. 844.

linnaeanum Torell, Walcott, No. 844.

torelli Linnarsson, Walcott, No. 844.

Equisetum oregonense Newb., Newberry, No. 573a.

robustum Newb., Newberry, No. 573a.

wyomingense Lesq., Newberry, No. 573a.

sp. ?, Newberry, No. 573a.

Eridopora, Simpson, No. 702.

Erisocrinus toddanus n. sp., Butts, No. 116.

Ervilia Turton, Dall, No. 184.

chipolana n. sp., Dall, No. 184.

lata n. sp., Dall, No. 184.

oregonensis n. sp., Dall, No. 184.

planata n. sp., Dall, No. 184.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Ervilia* polita n. sp., Dall, No. 184.  
*triangularis* n. sp., Dall, No. 184.  
*Eschatius* conidens Cope, Wortman, No. 935.  
*Estheria*, Jones, No. 397.  
*Eucalyptus*, Ward, No. 847.  
*nervosa* Newb., Hollick, No. 367.  
*Euchirosaurus*, Case, No. 134.  
*Euchodus* amicodus n. sp., Stewart, No. 748.  
*parvus* n. sp., Stewart, No. 748.  
*Eulithota* fasciculata Haeckel, Walcott, No. 844.  
*Eumetria* verneuilana Hall, Weller, No. 860.  
*Euomphalus* Sowerby 1812, Berkey, No. 74.  
*Eurydictya*, Simpson, No. 702.  
*Euspiropora*, Simpson, No. 702.  
*Evactinopora*, Simpson, No. 702.  
*Exogyra* laeviuscula Roemer, Logan, No. 498.  
*ponderosa* Roemer, Logan, No. 498.  
*"Fabella"* oblonga, Harris, No. 334.  
*Fagus* cretacea Newb., Newberry, No. 573a.  
*Favicella*, Simpson, No. 702.  
*Favosites* conicus Hall, Girty, No. 300.  
*conradi*, n. sp., Girty, No. 300.  
*helderbergiae* Hall, Girty, No. 300.  
*Fenestella*, Simpson, No. 702.  
*Fenestralia*, Simpson, No. 702.  
*Fenestrapora*, Simpson, No. 702.  
*Ficus* (?) alaskana Newb., Newberry, No. 573a.  
*asarifoliaminor* Lesq., Newberry, No. 573a.  
*(?) condoni* Newb., Newberry, No. 573a.  
*hadjdenii* Lesq., Kirchner, No. 442.  
*krausiana* Heer, Hollick, No. 367.  
*membranacea* Newb., Newberry, No. 573a.  
*planicostata* Lesq. ?, Newberry, No. 573a.  
*reticulata* (Lesq.) Hollick, Newberry, No. 573a.  
*woolconi* Newb. (?), Hollick, No. 368.  
*Fistulana* (Bruguiere) Cuvier, Dall, No. 184.  
*ocalana*, n. sp., Dall, No. 184.  
*Fistulicella*, n. gen., Simpson, No. 702.  
*Fistulipora*, Simpson, No. 702.  
*Fistuliporella* n. gen., Simpson, No. 702.  
*Fistuliporidra* n. gen., Simpson, No. 702.  
*Fistuliporina* n. gen., Simpson, No. 702.  
*Flabellina* cordata Reuss, Bagg, No. 27.  
*sagittaria* (Lea), Bagg, No. 27.  
*Flabelliporella*, Simpson, No. 702.  
*Fraxinus* affinis Newb., Newberry, No. 573a.  
*denticulata* Heer ?, Newberry, No. 573a.  
*integrifolia* Newb., Newberry, No. 573a.  
*Frondicularia* alata d'Orbigny, Bagg, No. 27.  
*angusta* (Nilsson) var. *dimidia* Bagg, No. 27.  
*archiaciana* d'Orbigny, var. *strigillata* n. var., Bagg, No. 27.  
*clarki* Bagg, Bagg, No. 27.  
*gaultina* Reuss, Bagg, No. 27.  
*inversa* Reuss, Bagg, No. 27.  
*lanceola* Reuss, Bagg, No. 27.  
*major* Bornemann, Bagg, No. 27.  
*ovata* Roemer, Bagg, No. 27.  
*pulchella* Karrer, Bagg, No. 27.  
*reticulata* (Reuss), Bagg, No. 27.  
*verneuilina* d'Orbigny, Bagg, No. 27.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Fusus* *fragilis* Wagner, Dall, No. 185.  
*umbilicatus* Wagner, Dall, No. 185.  
*Galesaurus*, Case, No. 135.  
*Gallicus* n. gen., Hay, No. 337.  
*Gastrochæna* *cuneiformis* Spengler, Dall, No. 184.  
*ovata* Sowerby, Dall, No. 184.  
*(Spengler)* Cuvier, Dall, No. 184.  
*(Spengleria)* Tryon, Dall, No. 184.  
*var. rotunda* Dall, Dall, No. 184.  
*Gaudryina* *pupoides* d'Orbigny, Bagg, No. 27.  
*Geinitzia* *formosa* Heer, Hollick, No. 370.  
*Glassia* *romingeri*, Hall and Clarke, No. 327.  
*Glaucome*, Simpson, No. 702.  
*Gleichenia* *gracilis* Heer (?), Hollick, No. 367.  
*Globigerina* *bulloides* d'Orbigny, Bagg, No. 27.  
*bulloides*, McClung, No. 514.  
*var. triloba* Reuss, Bagg, No. 27.  
*cretacea* d'Orbigny, Bagg, No. 27.  
*spinosa*, McClung n. sp., McClung, No. 514.  
*Glomus* Jeffreys, Dall, No. 184.  
*Glossotrypa*, Simpson, No. 702.  
*Glycymeria* *alabama* n. sp., Harris, No. 334.  
*Glycymeris* Da Costa, Dall, No. 184.  
*americana* Defrance, Dall, No. 184.  
*duplinensis* n. sp., Dall, No. 184.  
*jamaicensis* n. sp., Dall, No. 184.  
*lævis* Thomey and Holmes, Dall, No. 184.  
*parilis* Conrad, Dall, No. 184.  
*pectinata* Gmelin, Dall, No. 184.  
*pennacea* Lamarck, Dall, No. 184.  
*subovata* var. *plagia* Dall, No. 184.  
*Glyphioceras* *spilæricus* Martin (?), Weller, No. 860.  
*Glyptodon*, Case, No. 136.  
*Glyptostrobus* *europæus* (Brong.) Heer, Newberry, No. 573a.  
*Gomphognathus*, Case, No. 135.  
*Gomphotherium* Cope, Wortman, No. 935.  
*camelooides* n. sp., Wortman, No. 935.  
*sternbergi* Cope, Wortman, No. 935.  
*Goniopholis*, Case, No. 135.  
*Goniotrypa*, Simpson, No. 702.  
*Graptodictya*, Simpson, No. 702.  
*Grewia* *crenata* (Ung.) Heer, Newberry, No. 573a.  
*Gryphæa* subgen. Lamarck, Dall, No. 184.  
*corrugata* Say (n. gen. *G. corrugata* Hill), Hill and Vaughan, No. 356.  
*gibberosa* Cragin, Hill and Vaughan, No. 356.  
*marcoui* n. sp., Hill and Vaughan, No. 356.  
*mucronata* Gabb, Hill and Vaughan, No. 356.  
*navia* Hall, Hill and Vaughan, No. 356.  
*newberryi* Stanton, Hill and Vaughan, No. 356.  
*pitcheri* Morton, Hill and Vaughan, No. 356.  
*var. hilli* Cragin, Hill and Vaughan, No. 356.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Gryphaea* *wardi* n. sp., Hill and Vaughan, No. 356.  
*washitaensis* Hill, Hill and Vaughan, No. 356.

*Gypidula* *romingeri*, Hall and Clarke, No. 327.

*Gyroceras* *numa* Billings, Whiteaves, No. 875.

*Gyroptychius*, Case, No. 133.

*Hadrosaurus*, Case, No. 135.

*Hainosaurus*, Williston, No. 902.

*Halopus*, Case, No. 135.

*Haplophragmium* *concavum* Bagg, Bagg, No. 27.  
*irregularare* (Roemer), Bagg, No. 27.

*Haploscapha* *eccentrica* Conrad, Logan, No. 498.  
*grandis* Conrad, Logan, No. 498.  
*niobrarensis*, Logan, No. 498.

*Hedera* sp. ?, Hollick, No. 368.

*Hederella*, Simpson, No. 702.  
(?) *Helicoceras* *corrugatum* Stanton, Logan, No. 498.

*Helicopora*, Simpson, No. 702.

*Helochelys*, Case, No. 135.

*Helodus* *coxanus* n. sp., Newberry, No. 573.

*Helopora*, Simpson, No. 702.

*Hemiphragma*, Simpson, No. 702.

*Hemitrypa*, Simpson, No. 702.

*Hernodia*, Simpson, No. 702.

*Hesperornis* *regalis*, Williston, No. 902.

*Heterocardia* Deshayes, Dall, No. 184.  
(?) *Heteroceras* *angulatum* M. & H., Logan, No. 498.  
*cochleatum* M. & H., Logan, No. 498.

*Heterodontosuchus* *ganei* n. gen. et sp., Lucas, No. 501.

*Heterotrypa*, Simpson, No. 702.

*Hexarhizites* *insignis* Haeckel, Walcott, No. 844.

*Hindia* *fibrosa* Roemer, Girty, No. 300.

*Hinnites* *crassus* Conrad, Dall, No. 184.

*Holocephali*, Case, No. 133.

*Holosaurus*, Williston, No. 902.

*Holptychius*, Case, No. 133.

*Homotrypa*, Simpson, No. 702.

*Homotrypella*, Simpson, No. 702.

*Hydreionocrinus* *kansasensis* n. sp., Weller, No. 861.

*Hylerpeton*, Case, No. 134.

*Hylonomus*, Case, No. 134.

*Hyomeryx* Marsh, Scott, No. 692.

*Hyperodapedon*, Case, No. 135.

*Hyposaurus* *velli* Cope, Williston, No. 902.

*Hypotherium* *gratum* (H. *ingenuum* Leidy), Leidy, No. 481.  
*plicatile*, Leidy, No. 481.  
*princeps*, Leidy, No. 481.

*Hypnum* *brownii* n. sp., Kirchner, No. 442.

*Hypseloconus* n. gen., Berkey, No. 74.  
*capuloides* n. sp., Berkey, No. 74.  
*cornutiformis* n. sp., Berkey, No. 74.  
*cylindricus* n. sp., Berkey, No. 74.  
*franconiensis* n. sp., Berkey, No. 74.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Hypseloconus* *recurvus* (Whitfield) var. *elongatus* n. var., Berkey, No. 74.  
*stabilis* n. sp., Berkey, No. 74.

*Ichthyodectes* *cruentus* n. sp., Hay, No. 337.

*Ichthyorachis*, Simpson, No. 702.

*Ichthyodorulite*, Case, No. 133.

*Ichthyornis* *dispar* Marsh, Williston, No. 902.

*Icthyosaurus*, Case, No. 135.

*Idiotrypa*, Simpson, No. 702.

*Iguanodon*, Case, No. 135.

*Ilex* *rigida* n. sp., Kirchner, No. 442.

*Inoceramus* *altus* Meek, Logan, No. 498.  
*brownii* Cragin, Logan, No. 498.  
*concentricus* n. sp., Logan, No. 498.  
*cryspsii* var. *barabina* Morton, Logan, No. 498.

*deformis* Meek, Logan, No. 498.

*dimidius* White, Logan, No. 498.

*exogyroides* M. & H., Logan, No. 498.

*flaccidus* White, Logan, No. 498.

*fragilis* M. & H., Logan, No. 498.

*gilbertii* White, Logan, No. 498.

*incurvus* M. & H., Logan, No. 498.

*labiatus* Schlotheim, Logan, No. 498.

*pennatus* n. sp., Logan, No. 498.

*platinus* n. sp., Logan, No. 498.

*sagensis* var. *nebrascensis* Owen, Logan, No. 498.

*simpsonii* Meek, Logan, No. 498.

*subconvexus* n. sp., Logan, No. 498.

*subtriangulatus* n. sp., Logan, No. 498.

*tenuirostratus* M. & H., Logan, No. 498.

*truncatus* n. sp., Logan, No. 498.

*umbonatus* M. & H., Logan, No. 498.

*undabundus* M. & H., Logan, No. 498.

*Intrapora*, Simpson, No. 702.

*Iris* sp. ?, Newberry, No. 573a.

*Isotrypa*, Simpson, No. 702.

*Julia* Gould, Dall, No. 184.  
*floridana* n. sp., Dall, No. 184.

*Juglans* *affinis* n. sp., Kirchner, No. 442.  
*arctica* Heer (?), Hollick, No. 367.

*crossii* Knowlton, Kirchner, No. 442.

*nigella* Heer, Newberry, No. 573a.  
*occidentalis* Newb., Newberry, No. 573a.

“*Kellia*” *prima*, Harris, No. 334.

*Keristella* cf. *haskinsi* Hall, Girty, No. 299.

*Labiosa* (Ræta) Gray, Dall, No. 184.  
*alta* Conrad, Dall, No. 184.

*canaliculata* Say, Dall, No. 184.  
(Rætella) Dall, No. 184.  
(Schmidt) Moller, Dall, No. 184.

*Lagena* *globosa* (Montagu) Bagg, No. 27.

*Laotira* Walcott, Walcott, No. 844.  
*cambria*, Walcott, Walcott, No. 844.

*Lariosaurus*, Case, No. 135.

*Lastrea* (Goniopteris) *fischeri* Heer ?, Newberry, No. 573a.

*Laurus* *plutonia* Heer, Hollick, Nos. 367, 370.

*Leda* Schumacher, Dall, No. 184.  
*acala* n. sp., Dall, No. 184.

*acrybia* n. sp., Dall, No. 184.

*acuta* Conrad, Dall, No. 184.

*amydra* n. sp. ?, Dall, No. 184.

## Paleontology—Continued.

## Genera and species described—Continued.

Leda catasarea n. sp., Dall, No. 184.  
 concentrica Say, Dall, No. 184.  
 corpulentoides var., Harris, No. 334.  
 dodona n. sp., Dall, No. 184.  
 elongatoidea, Harris, No. 334.  
 flexuosa Heilprin, Dall, No. 184.  
 hypsoma n. sp., Dall, No. 184.  
 (linifera Conrad var. ?) canonica n. sp.,  
 Dall, No. 184.  
 marieana, Harris, No. 334.  
 multilineata Conrad, Dall, No. 184.  
 parva, Harris, No. 334.  
 phalacra n. sp. ?, Dall, No. 184.  
 pharcida n. sp., Dall, No. 184.  
 protexta, Harris, No. 334.  
 protexta Gabb, Dall, No. 184.  
 trochilia n. sp., Dall, No. 184.  
 Leguminositis marcouanus Heer, Newberry,  
 No. 573a.  
 Leiorchynchus quadricostatum Vanuxem,  
 Girty, No. 299.  
 Lepidodendron, Dawson, No. 223.  
 cyclostigma Lx., White, No. 870.  
 Lepidophloios, Dawson, No. 223.  
 acadicanus Dawson, Dawson, No. 223.  
 cliftonensis Dawson, Nos. 223, 224.  
 Leptænisa adnascens, Hall and Clarke, No.  
 327.  
 tangens, Hall and Clarke, No. 327.  
 Leptobrachites gigantea Haeckel, Walcott,  
 No. 844.  
 trigonobrachius Haeckel, Walcott, No.  
 844.  
 Leptophractus, Case, No. 134.  
 Leptoreodon marshi, n. gen. et sp., Wortman,  
 No. 935.  
 Leptotragulus Scott and Osborn, Scott, No.  
 692.  
 Leptotrypa, Simpson, No. 702.  
 Lichenalia, Simpson, No. 702.  
 Lima (Bruguière) Cuvier, Dall, No. 184.  
 ozarkana n. sp., Harris, No. 334.  
 (Ctenoides) scabra Born, Dall, No. 184.  
 tenera Sowerby, Dall, No. 184.  
 (Lima) caloosana n. sp., Dall, No. 184.  
 smirna n. sp., Dall, No. 184.  
 vicksburgiana n. sp., Dall, No. 184.  
 tampaensis n. sp., Dall, No. 184.  
 var. costulata n. sp., Dall, No. 184.  
 (Mantellum) caloosana n. sp., Dall, No.  
 184.  
 carolinensis n. sp., Dall, No. 184.  
 Limæa solida n. sp., Dall, No. 184.  
 Limopsis Sassi, Dall, No. 184.  
 Lindstroemella aspidium, Hall and Clarke,  
 No. 327.  
 Lingula Compta, Hall and Clarke, No. 327.  
 lingulata, Hall and Clarke, No. 327.  
 paraeletus, Hall and Clarke, No. 327.  
 scutella, Hall and Clarke, No. 327.  
 tæniola, Hall and Clarke, No. 327.  
 (Glossina) flabellula, Hall and Clarke, No.  
 327.  
 (Lingulipora) williamsana n. sp., Girty,  
 No. 299.

## Paleontology—Continued.

## Genera and species described—Continued.

Lingulina carinata d'Orbigny, Bagg, No. 27.  
 Lingulipora n. subgen., Girty, No. 299.  
 Lingulops granti, Hall and Clarke, No. 327.  
 Linnarssonii beltii Dav. mut. magna n. mut.,  
 Matthew, No. 535.  
 Liorhynchus lesleyi, Hall and Clarke, No. 327.  
 robustus, Hall and Clarke, No. 327.  
 Liostracus validus n. sp., Matthew, No. 535.  
 Liquidambar europæum Al. Br., Newberry,  
 No. 573a.  
 obtusilobatus (Heer) Hollick, Newberry,  
 No. 573a.  
 Liriodendron meekii (Heer), Newberry, No.  
 573a.  
 primævum Newb., Newberry, No. 573a.  
 Lithophaga Bolten, Dall, No. 184.  
 antillarum Orbigny, Dall, No. 184.  
 (?) batesvillensis n. sp., Weller, No. 860.  
 nigra Orbigny, Dall, No. 184.  
 nuda n. sp., Dall, No. 184.  
 (Diverus) bisulcata Orbigny, Dall, No.  
 184.  
 (Myoforceps) aristata Dillwyn, Dall  
 No. 184.  
 Litoceras versutum Billings, Whiteaves, No.  
 875.  
 Loculipora, Simpson, No. 702.  
 Lucina astartiformis, Harris, No. 334.  
 greggi, Harris, No. 334.  
 occidentalis Morton, Logan, No. 498.  
 ozarkana n. sp., Harris, No. 334.  
 pomilia, Harris, No. 334.  
 symmetrica (?), Harris, No. 334.  
 ulrichi, Harris, No. 334.  
 Lutraria Lamarck, Dall, No. 184.  
 Lycosaurus, Case, No. 135.  
 Lygodium kaulfussi Heer, Newberry, No.  
 573a.  
 Lyropora, Simpson, No. 702.  
 Lyroporella, Simpson, No. 702.  
 Lyroporidra n. gen., Simpson, No. 702.  
 Lysactinella n. gen., Girty, No. 300.  
 gebhardi, n. sp., Girty, No. 300.  
 perelegans n. sp., Girty, No. 300.  
 Lytoceras Suess, Smith, No. 713.  
 alamedense n. sp., Smith, No. 713.  
 Mactra Lamarck, Dall, No. 184.  
 chipolana n. sp., Dall, No. 184.  
 clathrodon Lea, Dall, No. 184.  
 emmonsii Meek, Logan, No. 498.  
 prætenuis var. bistriata, Harris, No. 334.  
 Linné, Dall, No. 184.  
 (Cœlomactra) Dall, Dall, No. 184.  
 (Mactrella) Gray, Dall, No. 184.  
 darienensis n. sp., Dall, No. 184.  
 (Mactroderma) Dall, No. 184.  
 (Mactrotoma) Dall, No. 184.  
 cymata n. sp., Dall, No. 184.  
 fragilis Gmelin, Dall, No. 184.  
 undula n. sp., Dall, No. 184.  
 willcoxi, n. sp., Dall, No. 184.  
 Mactropsis Conrad, Dall, No. 184.  
 Magnolia alternans Heer (?), Newberry, No.  
 573a.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Magnolia* *elliptica* Newb. n. sp., Newberry, No. 573a.  
*longifolia* Newb. (?), Hollick, No. 368.  
*obovata* Newb., Newberry, No. 573a.  
*rotundifolia* Newb., Newberry, No. 573a.  
*woodringensis* Hollick, Hollick, No. 367, 370.

*Manicaria* *haydenii* Newb., Newberry, No. 573a.

*Marginulina* *ensis* Reuss, Bagg, No. 27.  
*pediformis* Bornemann, Bagg, No. 27.  
*trilobata* d'Orbigny, Bagg, No. 27.

*Martesia* Leach, Dall, No. 184.  
*elongata*, Harris, No. 334.  
*? ovalis* n. sp., Dall, No. 184.

*Mastodon* *floridanus*, Leidy, No. 481.

*Mastodonsaurus*, Case, No. 134.

*Medusichnites* Matthew, Walcott, No. 844.

*Medusida* Walcott, Walcott, No. 844.  
*atava* Pohlig, Walcott, No. 844.  
*bicincta* Haeckel, Walcott, No. 844.  
*coststata* Torrell (sp.), Walcott, No. 844.  
*deperdita* Beyrich (sp.), Walcott, No. 844.  
*porpitina* Haeckel, Walcott, No. 844.  
*princeps* Torrell (sp.), Walcott, No. 844.  
*quadrata* Haeckel, Walcott, No. 844.  
*radiata* Linnarsson (sp.), Walcott, No. 844.  
*staurophora* Haeckel, Walcott, No. 844.

*Medusites* *cretaceous* Kner, Walcott, No. 844.  
*helgolandicus* Brandt, Walcott, No. 844.  
*latilobatus* Ammon, Walcott, No. 844.

*Meekapora*, Simpson, No. 702.

*Megalneusaurus* n. gen., Knight, No. 446.  
*rex* Knight, Knight, No. 446.

*Megalonyx*, Case, No. 136.

*Melina* *Retzius*, Dall, No. 184.  
*maxillata* (Deshayes), Dall, No. 184.

*Melocrinus* *milwaukensis* n. sp., Weller, No. 862.  
var. *rotundus* n. var., Weller, No. 862.  
*nodosus* Hall, Weller, No. 862.  
var. *spiniferus* n. var., Weller, No. 862.  
*subglobosus* n. sp., Weller, No. 862.

*Meretrix* *fulva* n. var., Harris, No. 334.  
*greggi* n. var., Harris, No. 334.  
*hatchetigbeensis*, Harris, No. 334.  
*nuttaliopsis*, Harris, No. 334.  
*subimpressa* var., Harris, 334.

*Merista* *tennesseensis*, Hall and Clarke, No. 327.

*Meristella* *walcotti*, Hall and Clarke, No. 327.

*Merycodesmus* n. gen., Scott, No. 692.  
*gracilis* n. sp., Scott, No. 692.

*Mesodesma* Deshayes, Dall, No. 184.  
(Donacilla) (Lam.) Phillips, Dall, No. 184.  
(Paphies) Dall, No. 184.  
(Taria) Gray, Dall, No. 184.

*Mesosaurus*, Case, No. 135.

*Metoposaurus* (Metopias), Case, No. 134.

*Microgomphodon*, Case, No. 135.

*Microyoldia* Verrill, Dall, No. 184.

*Miliolina* *seminulum*, Bagg, No. 27.

*Mitoclema*, Simpson, No. 702.

*Modiola* *alabamensis*, Harris, No. 334.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Modiola* *gigas* Wagner, Dall, No. 185.  
(Brachydontes) *multilinigera* Meek, Logan, No. 498.

*Modiolaria* Beck, Dall, No. 184.  
*carolinensis* n. sp., Dall, No. 184.  
*lateralis* Say, Dall, No. 184.  
*virginica* Conrad, Dall, No. 184.

*Modiolus* Lamarck, Dall, No. 184.  
*cretaceus* Conrad, Dall, No. 184.  
*ducatelli* Conrad, Dall, No. 184.  
*silicatus* n. sp., Dall, No. 184.  
*pugensis* n. sp., Dall, No. 184.  
(Botula) *cinnamomeus* Lamarck, Dall, No. 184.

(Brachydontes) *critinus* Bolten, Dall, No. 184.  
*demissus* Dillwyn, Dall, No. 184.  
*grammatus* n. sp., Dall, No. 184.  
*guppyi* n. sp., Dall, No. 184.  
(Gregariella) *minimus* n. sp., Dall, 184.

*Monocotyledon* gen. et sp., (?) Newberry, No. 573a.

*Monograptus* *beecheri* n. sp., Girty, No. 300.

*Monomerella* *egani*, Hall and Clarke, No. 327.  
*greenii*, Hall and Clarke, No. 327.  
*kingi*, Hall and Clarke, No. 327.  
*ortoni*, Hall and Clarke, No. 327.

*Monopteria* *gibbosa* *alata* n. var., Beede, No. 63.

*Monotrypa*, Simpson, No. 702.

*Monotrypella*, Simpson, No. 702.

*Monticulipora*, Simpson, No. 702.

*Moriconia* *cyclotoxon* Deb. and Ett., Hollick, Nos. 367, 368.

*Morosaurus*, Williston, No. 905.

*Mortoniceras* *shoshonense* Meek, Logan, No. 498.  
*vermillionense* M. & H., Logan, No. 498.

*Mosasaurus*, Williston, No. 902.  
*horridus*, Williston, No. 902.

*Mulinia* Gray, Dall, No. 184.  
*caloosensis* n. sp., Dall, No. 184.  
*congesta* Conrad, Dall, No. 184.  
*lateralis* Say, Dall, No. 184.  
*milesii* Holmes, Dall, No. 184.  
*sapotilla* n. sp., Dall, No. 184.

*Mya* *arenaria* Linne, Dall, No. 184.  
*arkansana* n. sp., Weller, No. 860.  
*producta* Conrad, Dall, No. 184.  
*truncata* Linne, Dall, No. 184.

*Mylodon*, Case, No. 136.

*Myrica* *longa* Heer, Hollick, No. 368.  
(?) *trifoliata* Newb. n. sp., Newberry, No. 573a.

*Myrsine* *elongata* Newb., Hollick, No. 368.

*Myrtophyllum* (Eucalyptus ?) *geinitzi* Heer (?), Hollick, No. 367.

*Mytilus* (L.) Bolten, Dall, No. 184.  
*conradinus* Orbigny, Dall, No. 184.  
*edulis* Linné, Dall, No. 184.  
*pandionis* n. sp., Dall, No. 184.  
(Hormomyia) *exustus* Linné, Dall, No. 184.  
*hamatus* Say, Dall, No. 184.

(Mytiloconcha) *incurvus* Conrad, Dall, 184.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Naosaurus*, Case, No. 135.  
*Negundo triloba* Newb., Newberry, No. 573a.  
*Nemataxis*, Simpson, No. 702.  
*Nematopora*, Simpson, No. 702.  
*Nicholsonella*, Simpson, No. 702.  
*Nilssonia gibbsii* (Newb.), Hollick, Newberry, No. 573a.  
*Nodosaria aculeata*, Bagg, No. 27.  
*acuminata* (Reuss), Bagg, No. 27.  
*adolfinula* (d'Orbigny), Bagg, No. 27.  
*affinis*, Bagg, No. 27.  
*annulata* Reuss, Bagg, No. 27.  
*bacillum*, Bagg, No. 27.  
*communis* (d'Orbigny), Bagg, No. 27.  
*consobrina* (d'Orbigny), Bagg, No. 27.  
var. *emaciata* Reuss, Bagg, No. 27.  
*farcimen* (Soldani), Bagg, No. 27.  
*filiformis* d'Orbigny, Bagg, No. 27.  
*indifferens* (Reuss), Bagg, No. 27.  
*inornata* (d'Orbigny), Bagg, No. 27.  
*lævigata* d'Orbigny, Bagg, No. 27.  
*longiscata* d'Orbigny, Bagg, No. 27.  
*multicostata* (d'Orbigny), Bagg, No. 27.  
*nitida* d'Orbigny, Bagg, No. 27.  
*obliqua*, Bagg, No. 27.  
*obliqua* (Linné), Bagg, No. 27.  
*pauperata* (d'Orbigny), Bagg, No. 27.  
*polygona* Reuss, Bagg, No. 27.  
*radicula* (Linné), Bagg, No. 27.  
*raphanus* (Linné), Bagg, No. 27.  
*roemerii* (Neuguboren), Bagg, No. 27.  
*rotundata* (Reuss), Bagg, No. 27.  
*scabra* (Reuss), Bagg, No. 27.  
*spinulosa* (Montagu), Bagg, No. 27.  
*vertebralis* (Batsch), Bagg, No. 27.  
*williamsi*, Bagg, No. 27.  
*zippei* Reuss, Bagg, No. 27.  
*Nonionina affinis*, Bagg, No. 27.  
*boueana*, Bagg, No. 27.  
*depressula*, Bagg, No. 27.  
*scapha*, Bagg, No. 27.  
*ordenskioldia borealis* Heer, Newberry, No. 573a.  
*Nothosaurus*, Case, No. 135.  
*Nucula* Lamarck, Dall, No. 184.  
*chipolana* n. sp., Dall, No. 184.  
*magnifica* Con., Harris, No. 334.  
*ovula*, Harris, No. 334.  
*proxima* Say, Dall, No. 184.  
*prunicola* n. sp., Dall, No. 184.  
*shaleri* Dall, Dall, No. 184.  
*sinaria* n. sp., Dall, No. 184.  
*taphria* n. sp., Dall, No. 184.  
*Nyssa* (?) *cuneata* Newb., Newberry, No. 573a.  
*vetusta* Newb., Newberry, No. 573a.  
*Odontotrypa*, Simpson, No. 702.  
*Omphaloploios* n. gen., White, No. 870.  
*Onoclea sensibilis* fossilis Newb., Newberry, No. 573a.  
*Oracanthus lineatus* n. sp., Newberry, No. 573.  
*pugilunculus* St. J. & W., Newberry, No. 573.  
*vetustus*, Newberry, No. 573.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Orbiculoides batesvillensis* n. sp., Weller, No. 860.  
*berzeri*, Hall and Clarke, No. 327.  
*numulus*, Hall and Clarke, No. 327.  
*(Schizotreta) ovalis*, Hall and Clarke, No. 327.  
sp., Girty, No. 299.  
*Orbulina univerda*, McClung, No. 514.  
*Oriskania navicella*, Hall and Clarke, No. 327.  
*Ophiderpeton*, Case, No. 134.  
*Ornithochierus*, Case, No. 135.  
*Orthis flabellites* var. *spania*, Hall and Clarke, No. 327.  
(?) *glypta*, Hall and Clarke, No. 327.  
(?) *holstoni*, Hall and Clarke, No. 327.  
*panderiana*, Hall and Clarke, No. 327.  
(?) *saffordi*, Hall and Clarke, No. 327.  
*(Dalmatella) arcuaria*, Hall and Clarke, No. 327.  
*superstes*, Hall and Clarke, No. 327.  
*(Plæsiomys) loricula*, Hall and Clarke, No. 327.  
*(Rhipidomella) oweni*, Hall and Clarke, No. 327.  
*(Schizophoria) senecta*, Hall and Clarke, No. 327.  
*Orthoceras beauportense* n. sp., Whiteaves, No. 875.  
*eurekensis* (Walcott) (?) Weller, No. 860.  
*hagersvillense* n. sp., Whiteaves, No. 875.  
*tenuistriata* Hall, Whiteaves, No. 875.  
*walpolensem* n. sp., Whiteaves, No. 875.  
*westoni* n. sp., Whiteaves, No. 875.  
*Orthothetes desideratus*, Hall and Clarke, No. 327.  
*Orthotropia dolomitica*, Hall and Clarke, No. 327.  
*Oryctomya* n. subgen., Dall, No. 189.  
*Osteocephalus*, Case, No. 134.  
*Osteolepis*, Case, No. 133.  
*Ostrea* Lamarck, Dall, No. 184.  
*alabamiensis* Lea, Dall, No. 184.  
*alabamiensis* Lea, Harris, No. 334.  
*anceps* n. sp., Logan, No. 498.  
*carolinensis* Conrad, Dall, No. 184.  
*compressirostra*, Harris, No. 334.  
*compressirostra* Say, Dall, No. 184.  
*congesta* Conrad, Logan, No. 498.  
*crenulimarginata* Gabb, Dall, No. 184.  
*falco* Dall, No. 184.  
*georgiana* Conrad, Dall, No. 184.  
*haitensis* Sowerby, Dall, No. 184.  
*johnsoni* Aldrich, Dall, No. 184.  
*lugubris* Conrad, Logan, No. 498.  
*megodon*, Dall, No. 184.  
*percassa* Conrad, Dall, No. 184.  
*podagrina*, Dall, No. 184.  
*pulaskensis* Harris, Dall, No. 184.  
*sculpturata* Conrad, Dall, No. 184.  
*sellæformis* Conrad, Dall, No. 184.  
*sellæformis* Harris, No. 334.  
*thirsæ* Harris, No. 334.  
*thirsæ* Gabb, Dall, No. 184.

## Paleontology—Continued.

## Genera and species described—Continued.

Ostrea trigonalis Dall, No. 184.  
 var. *sylværupis*, Harris, No. 334.  
*vicksburgensis* Conrad, Dall, No. 184.  
*virginica* Gmelin, Dall, No. 184.  
 (Alectronata) larva Lamarck, Logan, No. 498.  
 (Gryphæostrea) *subeversa* Conrad, Dall, No. 184.  
 Pachydictya, Simpson, No. 702.  
 Pachyrhizodus leptognathus n. sp., Stewart, No. 748.  
 velox n. sp., Stewart, No. 748.  
 Palaeomylus Woodward (1891), Eastman, No. 246.  
*greenei* Eastman, No. 246.  
 predator n. sp., Eastman, No. 246.  
 Paleosyops, Case, No. 136.  
 Paliurus integrifolius Hollick (?), Hollick, No. 370.  
 Panomya Gray, Dall, No. 184.  
 ampla Dall, No. 184.  
 norvegica Spengler, Dall, No. 184.  
 Panopea Menard, Dall, No. 184.  
 americana Conrad, Dall, No. 184.  
 floridana Heilprin, Dall, No. 184.  
 goldfussi Wagner, Dall, No. 184.  
 grenerosa Gould, Dall, No. 184.  
 reflexa Say, Dall, No. 184.  
 whittfieldi Dall, Dall, No. 184.  
 Panothrus, Case, No. 136.  
 Pantolambda bathmodon Cope, Osborn, No. 589.  
*cavirictus* Cope, Osborn, No. 589.  
 Paradoxides abenacae mut., Matthew, No. 535.  
 Parameryx Marsh, Scott, No. 692.  
 (Leptotragulus) *proavus* Wortman, No. 935.  
 Paramya Conrad, Dall, No. 184.  
 subovata Conrad, Dall, No. 184.  
 Parapholas Conrad, Dall, No. 184.  
*sphenoideus* White, Logan, No. 498.  
 sp., Logan, No. 498.  
 Parastrophia divergens, Hall and Clarke, No. 327.  
*greenii*, Hall and Clarke, No. 327.  
*latiplicata*, Hall and Clarke, No. 327.  
*multiplicata*, Hall and Clarke, No. 327.  
 Pareiasaurus, Case, No. 135.  
 Pchyrornis, Case, No. 136.  
 Pecopteris (Cheilanthes) *sepulta* Newb., Newberry, No. 573a.  
 Pecten Müller, Dall, No. 184.  
*cretaceus* n. sp., Dall, No. 184.  
*hericeus* var. *hindsii* Carpenter, Dall, No. 184.  
 var. *strategus* Dall, Dall, No. 184.  
*jeffersonius* var. *septenarius*, Say, Dall, No. 184.  
*madisonius* var. *sayanus* n. var., Dall, No. 184.  
 (perplanus var.?) *centrotus*, Dall, No. 184.  
 (Æquipecten?) *chipolanus* n. sp., Dall, No. 184.  
*choctavensis* Aldrich, Dall, No. 184.

## Paleontology—Continued.

## Genera and species described—Continued.

Pecten (Æquipecten?) *glyptus* Verrill, Dall, No. 184.  
*inæqualis* Sowerby, Dall, No. 184.  
*oxygonum* Sowerby, Dall, No. 184.  
*perplanus* Morton, Dall, No. 184.  
*scissuratus* n. sp., Dall, No. 184.  
*suwanneensis* n. sp., Dall, No. 184.  
*thetidis* Sowerby, Dall, No. 184.  
 (Amusium) Bolten, Dall, No. 184.  
*ocalanus* n. sp., Dall, No. 184.  
 precursor n. sp., Dall, No. 184.  
 (Chlamys) Bolten, Dall, No. 184.  
*altilplicatus* Conrad, Dall, No. 184.  
*alumensis* n. sp., Dall, No. 184.  
*clarkeanus* Aldrich, Dall, No. 184.  
*cocoanus* n. sp., Dall, No. 184.  
*coccymelus* n. sp., Dall, No. 184.  
*decemnarius* Conrad, Dall, No. 184.  
*deshayesii* Lea, Dall, No. 184.  
*exasperatus* Sowerby, Dall, No. 184.  
*fucanus* n. sp., Dall, No. 184.  
*greggi* Harris, Dall, No. 184.  
*harrisii* n. sp., Dall, No. 184.  
*hericeus* Gould, Dall, No. 184.  
 var. *navarchus* Dall, Dall, No. 184.  
*indecisus* n. sp., Dall, No. 184.  
*interlineatus* Gabb, Dall, No. 184.  
*islandicus* Müller, Dall, No. 184.  
*kneiskerni* Conrad, Dall, No. 184.  
*latiauritus* Conrad, Dall, No. 184.  
 var. *fucicolus*, Dall, No. 184.  
 var. *monotimeris* Conrad, Dall, No. 184.  
*nuperus* Conrad, Dall, No. 184.  
*opunta* n. sp., Dall, No. 184.  
*ornatus* Lamarck, Dall, No. 184.  
 var. *vaginulus* Dall, Dall, No. 184.  
*parmeleei* n. sp., Dall, No. 184.  
*tricenarius* Conrad, Dall, No. 184.  
*wahtubbeanus* n. sp., Dall, No. 184.  
 var. *wilcoxi* n. sp., Dall, No. 184.  
 (Hinnites) Defrance, Dall, No. 184.  
 (Euvola) *bowdenensis* n. sp., Dall, No. 184.  
 (Lyropecten) Conrad, Dall, No. 184.  
 (Nodipecten) *anatipes* Morton, Dall, No. 184.  
*antillarum* Reclus, Dall, No. 184.  
*caloosaensis* n. sp., Dall, No. 184.  
*condylomatus* n. sp., Dall, No. 184.  
*nodosus* Linné, Dall, No. 184.  
*peedeeensis* Tuomey and Holmes, Dall, No. 184.  
*pulchricosta* Meyer and Aldrich, Dall, No. 184.  
*rogersi* Conrad, Dall, No. 184.  
*subnodosus* Sowerby, Dall, No. 184.  
 (Patinopecten) Dall, Dall, No. 184.  
*bellus* Conrad, Dall, No. 184.  
*biformis* Conrad, Dall, No. 184.  
*burnsii* n. sp., Dall, No. 184.  
*caurinus* Gould, Dall, No. 184.  
*compactus* n. sp., Dall, No. 184.  
*coosensis* Shumard, Dall, No. 184.  
*diegensis* Dall, Dall, No. 184.

## Paleontology—Continued.

## Genera and species described—Continued.

Pecten (*Patinopecten*) *eugrammatus* n. sp.,  
Dall, No. 184.  
  *expansus* Dall, Dall, No. 184.  
  *hemicyclicus* Racenel, Dall, No. 184.  
  *hemphillii* Dall, Dall, No. 184.  
  *humphreysii* Conrad, Dall, No. 184.  
  *poulsoni* Morton, Dall, No. 184.  
  *propatulus* Conrad, Dall, No. 184.  
  *ravemeli* n. sp., Dall, No. 184.  
  *soror* Gabb, Dall, No. 184.  
  *stearnsii*, Dall, No. 184.  
(*Placopecten*) Verrill, Dall, No. 184.  
  *clintonius* Say, Dall, No. 184.  
  *marylandicus* Wagner, Dall, No. 184.  
(*Plagiocentrum*) *excentricus* Gabb, Dall,  
No. 184.  
  *gabbi* Dall, Dall, No. 184.  
  *demiurgus* n. sp., Dall, No. 184.  
  *deserti* Conrad, Dall, No. 184.  
  *gibbus* Linne, Dall, No. 184.  
    var. *amplicostatus* Dall, Dall, No.  
      184.  
    var. *borealis*, Dall, No. 184.  
    var. *dislocatus* Say, Dall, No. 184.  
    var. *irradians* Lamarck, Dall, No.  
      184.  
    var. *nucleus* Born, Dall, No. 184.  
  *magellanicus* Emelin, Dall, No. 184.  
  *oboreus* Conrad, Dall, No. 184.  
    var. *comparilis* Tuomey and  
      Holmes, Dall, No. 184.  
    var. *darlingtonensis* Dall, No. 184.  
    var. *eboreus* Conrad, Dall, No. 184.  
    var. *senescens* Dall, Dall, No. 184.  
    var. *solaroides* Heilprin, Dall,  
      No. 184.  
    var. *yorkensis* Conrad, Dall, No.  
      184.  
  *pablocensis* Conrad, Dall, No. 184.  
  *subventricosus* n. sp., Dall, No. 184.  
  *virginianus* Conrad, Dall, No. 184.  
(*Propeamuseum*) *alabamensis* Aldrich,  
Dall, No. 185.  
  *alaskensis* Dall, Dall, No. 184.  
(*Pseudamusum*) H. and A. Adams, Dall,  
No. 184.  
  *calvatus* Morton, Dall, No. 184.  
  *cerinus* Conrad, Dall, No. 184.  
  *frontalis* Dall, No. 184.  
  *guppyi* n. sp., Dall, No. 184.  
  *scintillatus* Conrad, Dall, No. 184.  
Pectunculus *idoneus*, Harris, No. 334.  
  *virginiae* Wagner, Dall, No. 185.  
Pelion, Case, No. 134.  
Pentamerus *oblongus* Sowerby, var. *maquoketa*, Hall and Clarke, No. 327.  
  var. *subrectus*, Hall and Clarke, No. 327.  
Pentremiridea *filosa* Whiteaves (?), Weller,  
No. 862.  
  *milwaukensis* n. sp., Weller, No. 862.  
Pephricaris *horripilata* n. sp., Clarke, No. 156.  
Periploma *butleriana*, Harris, No. 334.  
Petalotrypa, Simpson, No. 702.  
Petigopora, Simpson, No. 702.

## Paleontology—Continued.

## Genera and species described—Continued.

Phacelopora, Simpson, No. 702.  
Phænopora, Simpson, No. 702.  
Phaneropleuron, Case, No. 133.  
Phenacodus *primævus* Cope, Osborn, Nos. 588,  
592.  
Phlyctalnacanthus, *telleri*, n. sp., Eastman,  
No. 246.  
Pholadidea Goodall, Dall, No. 184.  
Pholas *alatoidea*, Harris, No. 334.  
  *producta* Conrad, Dall, No. 184.  
  (*Linné*) Lainarck, Dall, No. 184.  
  (*Thovana*) *campechiensis* Gmelin, Dall,  
    No. 184.  
    *memmingeri*, Tuomey and Holmes,  
      Dall, No. 184.  
Pholidops *calceola*, Hall and Clarke, No. 327.  
  *patina*, Hall and Clarke, No. 327.  
Phosphorosaurus, Williston, No. 902.  
Phractopora, Simpson, No. 702.  
Phragmites sp. (?), Newberry, No. 573a.  
Phyllites *carneosus* Newb., Newberry, No.  
573a.  
  *cupanioides* Newb., Newberry, No. 573a.  
  *obcordatus* Heer, Newberry, No. 573a.  
  *vanonæ* Heer, Newberry, No. 573a.  
  *venosus* Newb., Newberry, No. 573a.  
Phylloceras Suess, Smith, No. 713.  
  *onöense* Stanton, Smith, No. 713.  
Phyllodictya, Simpson, No. 702.  
Phyllopora, Simpson, No. 702.  
Pileotrypa, Simpson, No. 702.  
Pinacotrypa, Simpson, No. 702.  
Pinna *arkansana* n. sp., Weller, No. 860.  
  *caloosaensis* n. sp., Dall, No. 184.  
  *carnea* Gmelin, Dall, No. 184.  
  *quadrata* n. sp., Dall, No. 184.  
  *rudis* (*Linné*) Dillwyn, Dall, No. 184.  
    sp., Harris, No. 334.  
Pinnaporina, Simpson, No. 702.  
Pinus *hambachi* n. sp., Kirchner, No. 442.  
Pistacia *aquehongensis* n. sp., Hollick, No.  
368.  
Pityoxylon *hollicki* n. sp., Knowlton, No. 452.  
  n. sp., Hollick, No. 370.  
Placenticeras *placenta* Dekay, Logan, No. 498.  
Placodus, Case, No. 135.  
Placunonomia *lithobleta* n. sp., Dall, No. 184.  
  *plicata* Tuomey and Holmes, Dall, No. 184.  
Planera *crenata* Newb., Newberry, No. 573a.  
  *longifolia* Lesq., Newberry, No. 573a.  
  *mycrophylla* Newb., Newberry, No. 573a.  
  *nervosa* Newb., Newberry, No. 573a.  
  *variabilis* Newb., Newberry, No. 573a.  
Platanus *aspera* Newb., Newberry, No. 573a.  
  *haydenii* Newb., Newberry, No. 573a.  
  *latiloba* Newb., Newberry, No. 573a.  
  *nobilis* Newb., Newberry, No. 573a.  
  *raynoldsii* Newb., Newberry, No. 573a.  
Platecarpus, Williston, Nos. 902, 906.  
  *clidastoides*, Williston, No. 902.  
  *coryphæus*, Williston, No. 902.  
  *crassartus*, Williston, No. 902.  
  *felix*, Williston, No. 902.  
  *glandiferus*, Williston, No. 902.

## Paleontology—Continued.

## Genera and species described—Continued.

Platecarpus gracilis, Williston, No. 902.

ictericus, Williston, No. 902.

latifrons, Williston, No. 902.

latispinis, Williston, No. 902.

mudgei, Williston, No. 902.

oxyrhinus, Williston, No. 902.

planifrons, Williston, No. 902.

simus, Williston, No. 902.

tectulus, Williston, No. 902.

Platyodon Conrad, Dall, No. 184.

Plectambonites producta, Hall and Clarke, No. 327.

Plesiosaurus, Case, No. 135.

Plethospira socialis n. sp., Girty, No. 299.

Pleuracanthus, Case, No. 133.

Pleurodon S. Wood, Dall, No. 184.

woodii n. sp., Dall, No. 184.

Pleurostomella subnodososa Reuss, Bagg, No. 27.

Pliauchenia Cope, Wortman, No. 935.

humphresiana Cope, Wortman, No. 935.

minima n. sp., Wortman, No. 935.

spatula Cope, Wortman, No. 935.

Plicatula Lamarck, Dall, No. 184.

densata Conrad, Dall, No. 184.

filamentosa Conrad, Dall, No. 184.

var. concentrica, Dall, No. 184.

var., Harris, No. 334.

gibbosa Lamarck, Dall, No. 184.

marginata Say, Dall, No. 184.

Plioplatecarpus, Williston, No. 902.

Pododesmus rudis Broderip, Dall, No. 184.

scopelus n. sp., Dall, No. 184.

(Monia) macroschisma Deshayes, Dall, No. 184.

Poëbrotherium Leidy, Wortman, No. 935.

labiatum Cope, Wortman, No. 935.

wilsoni Leidy, Wortman, No. 935.

Polymorphina amygdaloides, Bagg, No. 27.

austriaca, Bagg, No. 27.

communis, Bagg, No. 27.

communis (d'Orbigny), Bagg, No. 27.

complanata, Bagg, No. 27.

compressa (d'Orbigny), Bagg, No. 27.

elegantissima, Bagg, No. 27.

emersoni n. sp., Bagg, No. 27.

gibba (d'Orbigny), Bagg, No. 27.

lactea, Bagg, No. 27.

lactea elongata var. Brady, Bagg, No. 27.

oblonga d'Orbigny, Bagg, No. 27.

orbignii (Zborzewski), Bagg, No. 27.

prælonga, Bagg, No. 27.

problema (d'Orbigny), Bagg, No. 27.

Polypora, Simpson, No. 702.

Polystomella striatopunctata, Bagg, No. 27.

Populites elegans Lesq. (?), Newberry, No. 573a.

Populus acerfolia Newb., Newberry, No. 573a.

cordata Newb., Newberry, No. 573a.

(? ) cordifolia Newb., Newberry, No. 573a.

cuneata Newb., Newberry, No. 573a.

cyclophylla Heer, Newberry, No. 573a.

(? ) debeyana Heer, Newberry, No. 573a.

elliptica Newb., Newberry, No. 573a.

elongata Newb., Newberry, No. 573a.

## Paleontology—Continued.

## Genera and species described—Continued.

Populus flabellum Newb., Newberry, No. 573a.

genetrix Newb., Newberry, No. 573a.

herkeriana Lesq. (?), Hellick, No. 368.

litigiosa Heer, Newberry, No. 573a.

microphylla Newb., Newberry, No. 573a.

nebrascensis Newb., Newberry, No. 573a.

nervosa Newb., Newberry, No. 573a.

polymorpha Newb., Newberry, 573a.

pyrifolia n. sp., Kirchner, No. 442.

rhomboidea Lesq., Newberry, No. 573a.

rotundifolia Newb., Newberry, No. 573a.

smilacifolia Newb., Newberry, No. 573a.

Portheus lowii n. sp., Stewart, No. 745.

Prasopora, Simpson, No. 702.

Prioniodus armatus Hinde, Girty, No. 299.

Prionocylus hyattii Stanton, Logan, No. 498.

lævianus White, Logan, No. 498.

macombi Meek, Logan, No. 498.

woolgari Mantell, Logan, No. 498.

wyomingensis Meek, Logan, No. 498.

Prismopora, Simpson, No. 702.

Proboscina, Simpson, No. 702.

Procamelus, Leidy, Leidy, No. 481.

Procamelus Leidy, Wortman, No. 935.

gracilis Leidy, Wortman, No. 935.

occidentalis Leidy, Wortman, No. 935.

robustus Leidy, Wortman, No. 935.

Productus cestriensis Worthen, Weller, No. 860.

cherokeensis n. sp., Drake, No. 239.

pertenuis Meek, Drake, No. 239.

(Marginifera) adairensis n. sp., Drake, No. 239.

Prognathosaurus, Williston, No. 902.

Protæoides daphnogenoides Heer, Hollick, No. 368.

Proterosaurus, Case, No. 135.

Protocardia lenis var., Harris, No. 334.

Protocicus inæqualis Newb., Newberry, No. 573a.

Protolabis Cope, Wortman, No. 935.

transinontanus Cope, Wortman, No. 935.

Protolambda n. gen., Osborn, No. 589.

hatcheri n. sp., Osborn, No. 589.

Protophyllum minus Lesq., Newberry, No. 573a.

multinerve Lesq., Newberry, No. 573a.

sternbergii Lesq., Newberry, No. 573a.

Protosphyraena recurvirostris n. sp., Stewart, No. 748.

Protosphyraeus bentonia n. sp., Stewart, No. 745.

n. sp., Stewart, No. 745.

Protostega, Case, No. 135.

ischyra (Wieland), Wieland, No. 882.

Protriton, Case, No. 134.

Protyleopus petersoni n. gen. et sp., Wortman, No. 935.

Proutella, Simpson, No. 702.

Prunus variabilis Newb., Newberry, No. 573a.

Psammobia ozarkana n. sp., Harris, No. 334.

Psammobiidæ, Dall, No. 188.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Psephodus* (*Helodus*) *politus* n. sp., Newberry, No. 573.

*Pseudamussium* *claibornense*, Harris, No. 334.

*Pteranodon*, Case, No. 135.

*Pteraspidae*, Case, No. 133.

*Pteria* *columbus* Bolten, Dall, No. 184.  
  *hirundo*, Bolten, Dall, No. 184.  
    var. *vitrea* Reeve, Dall, No. 184.

*multangula* H. C. Lea, Dall, No. 184.

*scopoli*, Dall, No. 184.  
(*argentea* var.?) *chipolana* Dall, Dall, No. 184.

*Pterichidae*, Case, No. 133.

*Pteris* *pennaeformis* Heer, Newberry, No. 573a.

*russellii* Newb., Newberry, No. 573a.

*Pterodactylus*, Case, No. 135.

*Pteronites* *hopkinsi* n. sp., Weller, No. 860.  
  *laevis* n. sp., Weller, No. 860.

*Pteropsis* Conrad, Dall, No. 184.

*Pterospermites* *dentatus* Heer, Newberry, No. 573a.

*modestus* Lesq., Hollick, No. 368.

*Ptilocella* n. gen., Simpson, No. 702.

*Ptilodictya*, Simpson, No. 702.

*Ptilopora*, Simpson, No. 702.

*Ptiloporella*, Simpson, No. 702.

*Ptiloporina*, Simpson, No. 702.

*Ptilotrypa*, Simpson, No. 702.

*Ptychonema*, Simpson, No. 702.

*Ptychoparia* *adamsi* Billings sp., Matthew, No. 535.  
  *calymenooides* (Whitfield), Berkey, No. 74.  
  *limbata* n. sp., Matthew, No. 535.

*Ptychosiagum*, Case, No. 135.

*Ptyctodus* *calceolus*, Eastman, No. 246.  
  *compressus* n. sp., Eastman, No. 246.  
  *ferrox* n. sp., Eastman, No. 246.  
  *obliquus*, Eastman, No. 246.  
  *major*, Eastman, No. 246.  
  *molaris*, Eastman, No. 246.  
  *panderi* n. sp., Eastman, No. 246.

*Ptyonius*, Case, No. 134.

*Pulvinulina* *elegans*, Bagg, No. 27.  
  *karsteni* (Reuss), Bagg, No. 27.  
  *micheliniana* (d'Orbigny), Bagg, No. 27.  
  *reticulata* Reuss, var. *carinata* Bagg, Bagg, No. 27.  
  *schreibersii*, Bagg, No. 27.

*Pyropsis* *coloradoensis* Stanton, Logan, No. 498.

*Pyrula* *nansemondi* Wagner, Dall, No. 185.

*Pyrus* *cretacea* Newb., Newberry, No. 573a.

*Quercus* *antiqua* Newb., Newberry, No. 573a.  
  *banksiae* Newb., Newberry, No. 573a.  
  *castanoides* Newb., Newberry, No. 573a.  
  *castanopsis* Newb., Newberry, No. 573a.  
  *consimilis* Newb., Newberry, No. 573a.  
  *coriacea* Newb., Newberry, No. 573a.  
  *dubia* Newb., Newberry, No. 573a.  
  *elliptica* Newb., Newberry, No. 573a.  
  *flexuosa* Newb., Newberry, No. 573a.  
  *gracilis* Newb., Newberry, No. 573a.  
  *gronlandica* Heer, Newberry, No. 573a.

## Paleontology—Continued.

*Genera and species described*—Continued.

*Quercus* *laurifolia* Newb., Newberry, No. 573a.

*morrisiana* Lesq., Hollick, No. 370.

(?) *novae-cæsareæ* n. sp., Hollick, No. 370.

*paucidentata* Newb., Newberry, No. 573a.

*salicifolia* Newb., Newberry, No. 373a.

*simplex* Newb., Newberry, No. 573a.

*sinuata* Newb., Newberry, No. 573a.

*sullyi* Newb., Newberry, No. 573a.

(?) sp.?, Hollick, No. 370.

*Radiolites* *maximus* n. sp., Logan, No. 498.

*Rangia* *desmoulini*, Dall, No. 184.  
  *johnsoni* Dall, Dall, No. 184.  
  (Rangianella) Conrad, Dall, No. 184.

*Receptaculites* *infundibuliformis* Eaton, Girty, No. 309.

*neptuni*, Girty, No. 300.

*oweni*, Girty, 300.

*Rensselaeria* *cayuga*, Hall and Clarke, No. 327.  
  *ovulum*, Hall and Clarke, No. 327.

*Reptaria*, Simpson, No. 702.

*Resania* Gray, Dall, No. 184.

*Reteporella*, Simpson, No. 702.

*Reteporina*, Simpson, No. 702.

*Rhabdogonium* *roemerii* Reuss, Bagg, No. 27.  
  *tricarinatum* (d'Orbigny), Bagg, No. 27.  
    var. *acutangulum* Reuss, Bagg, No. 27.

*Rhamnites* *concinnus* Newb., Newberry, No. 573a.

*Rhamnus* *elegans* Newb., Newberry, No. 573a.  
  *ellipticus* n. sp., Kirchner, No. 442.  
  *eridani* Ung., Newberry, No. 573a.  
  *inæquilateralis* Lesq., Hollick, No. 370.

*Rhamphorynchus*, Case, No. 135.

*Rhinidictya*, Simpson, No. 702.

*Rhinobolus* *davidsoni*, Hall and Clarke, No. 327.

*Rhinocarist* (?) *bipennis* n. sp., Clarke, No. 155.

*Rhinopora*, Simpson, No. 702.

*Rhizomorphs*, Hollick, No. 368.

*Rhizostomites* *admirandus* Haeckel, Walcott, No. 844.  
  *lithographicus* Haeckel, Walcott, No. 844.

*Rhombopora*, Simpson, No. 702.

*Rhopalonaria*, Simpson, No. 702.

*Rhophalodon*, Case, No. 135.

*Rhus* (?) *nervosa* Newb., Newberry, No. 573a.  
  *rotundifolia* n. sp., Kirchner, No. 442.

*Rhynchonella* *mutata* Hall, Weller, No. 860.

*Rhynchodus* *excavatus*, Eastman, No. 246.  
  *major* n. sp., Eastman, No. 246.  
  *occidentalis*, Eastman, No. 246.  
  *rostratus* n. sp., Eastman, No. 246.  
  *secans*, Eastman, No. 246.

*Rhynchospira* *scansa*, Hall and Clarke, No. 327.

*Rosmarus* *sosmarus*, Rhoads, No. 652.  
  *virginianus* (De Kay), Rhoads, No. 652.

*Rostellites* *ambigua*? Stanton, Logan, No. 498.  
  *willistonii* n. sp., Logan, No. 498.

*Rotalia* *beccarii*, Bagg, No. 27.  
  *orbicularis*, Bagg, No. 27.  
  *soldanii*, Bagg, No. 27.

*Sagenella*, Simpson, No. 702.

## Paleontology—Continued.

## Genera and species described—Continued.

Sabal campbelli Newb., Newberry, No. 573a.  
*grandifolia* Newb. n. sp., Newberry, No. 573a.  
*imperialis* Dn., Newberry, No. 573a.  
*powelli* Newb., Newberry, No. 573a.  
*Salix angusta* Al. Br. ?, Newberry, No. 573a.  
*cuneata*, Newb., Newberry, No. 573a.  
*flexuosa* Lesq., Hollick, No. 367.  
*flexuosa* Newb., Newberry, No. 573a.  
*foliosa* Newb. n. sp., Newberry, No. 573a.  
*inæqualis* Newb., Hollick, No. 368.  
*meekii* Newb., Hollick, No. 370.  
*meekii* Newb., Newberry, No. 573a.  
*membranacea* Newb., Newberry, No. 573a.  
*proteæfolia lanceolata* Lesq., Hollick, No. 367.  
*Sandalodus ellipticus* n. sp., Newberry, No. 573.  
*Sanguinolites* ? sp. ?, Weller, No. 860.  
*Sapindus affinis* Newb., Newberry, No. 573a.  
*apiculatus* Vel., Hollick, No. 370.  
(?) *membranaceus* Newb., Newberry, No. 573a.  
*morrisoni* Lesq., Hollick, No. 368.  
*Sapocites haydenii* Heer, Newberry, No. 573a.  
*Sarepta A.* Adams, Dall, No. 184.  
*Sassafras acutilobum* Lesq. (?), Hollick, No. 370.  
*cretaceum* Newb., Newberry, No. 573a.  
*recurvatum* (Lesq.) Newb., Newberry, No. 573a.  
*Saurocephalus dentatus* n. sp., Stewart, No. 745.  
*Saurodon ferox* n. sp., Stewart, No. 747.  
*xiphirostris* n. sp., Stewart, No. 747.  
*Sauropoda*, Marsh, No. 529.  
*Saxicava Fleuriau de Bellevue*, Dall, No. 184.  
*arctica* Linné, Dall, No. 184.  
*Scævogryra* Whitfield, 1878, Berkey, No. 74.  
*minnesotensis* n. sp., Berkey, No. 74.  
*Scalaripora*, Simpson, No. 702.  
*Scenellopora*, Simpson, No. 702.  
*Scapharca (Anadara) aresta* n. sp., Dall, No. 184.  
*campsa* n. sp., Dall, No. 184.  
*catasarca* n. sp., Dall, No. 184.  
*clisea* n. sp., Dall, No. 184.  
*rustica* Tuomey and Holmes, Dall, No. 184.  
*subrostrata* Conrad, Dall, No. 184.  
*(Argina) tolepis* n. sp., Dall, No. 184.  
*campechensis* Dillwyn, Dall, No. 184.  
*(Bathyarca) hendersoni* n. sp., Dall, No. 184.  
*spenceri* n. sp., Dall, No. 184.  
*(Cunearca) alcima* n. sp., Dall, No. 184.  
*cumanensis*, Dall, No. 184.  
*incongrua* Say, Dall, No. 184.  
*initiator* n. sp., Dall, No. 184.  
*scalarina* Heilprin, Dall, No. 184.  
*scalaris* Conrad, Dall, No. 184.  
*(Scapharca) accompsa* n. sp., Dall, No. 184.  
*actinophora* n. sp., Dall, No. 184.  
*arata* Say, Dall, No. 184.  
*auriculata* Lamarck, Dall, No. 184.

## Paleontology—Continued.

## Genera and species described—Continued.

*Scapharca (Scapharca) callicestosa* n. sp., Dall, No. 184.  
*campyla* n. sp., Dall, No. 184.  
*carolinensis* Wagner, Dall, No. 184.  
*chiriquiensis* Gabb, Dall, No. 184.  
*dodona* n. sp., Dall, No. 184.  
*donacia* n. sp., Dall, No. 184.  
*halidonata* n. sp., Dall, No. 184.  
*hypomeia* n. sp., Dall, No. 184.  
*idonea* Conrad, Dall, No. 184.  
*improcera* Conrad, Dall, No. 184.  
*inequilateralis* Guppy, Dall, No. 184.  
*latidentata*, Dall, No. 184.  
*lesueuri* Dall, Dall, No. 184.  
*lineosa* Say, Dall, No. 184.  
*plicatura* Conrad, Dall, No. 184.  
*santarosana* n. sp., Dall, No. 184.  
*staminata* n. sp., Dall, No. 184.  
*staminea* Say, Dall, No. 184.  
*subsinuata* Conrad, Dall, No. 184.  
*traversa* Say, Dall, No. 184.  
*triphera* n. sp., Dall, No. 184.  
*Scaphites larvæformis* M. & H., Logan, No. 498.  
*mullananus* M. & H., Logan, No. 498.  
*ventricosus* M. & H., Logan, No. 498.  
*vermiformis* M. & H., Logan, No. 498.  
*warrenii* M. & H., Logan, No. 498.  
*Scaphognathus*, Case, No. 135.  
*Sceptropora*, Simpson, No. 702.  
"Scintilla" clarkeana, Harris, No. 334.  
*Schizocrania* (?) helderbergia, Hall and Clarke, No. 327.  
*schucherti*, Hall and Clarke, No. 327.  
*Schizodus batesvillensis* n. sp., Weller No. 860.  
*depressus* Worthen (?), Weller No. 860.  
*insignis* n. sp., Drake, No. 239.  
*Schizodus* ? sp., Weller, No. 860.  
*Scyphomya* Dall, Dall, No. 184.  
*Selenella gracilis*, Hall and Clarke, No. 327.  
*Selenopora*, Simpson, No. 702.  
*Semæostomites zitteli* Haeckel, Walcott, No. 844.  
*Semicoscinium*, Simpson, No. 702.  
*Seminula dawsoni*, Hall and Clarke, No. 327.  
*rogersi*, Hall and Clarke, No. 327.  
*Semipora*, Simpson, No. 702.  
*Septopora*, Simpson, No. 702.  
*Sequoia gracillima* (Lesq.) Newb., Newberry, No. 573a.  
*heerii* Lesq., Newberry, No. 573a.  
*nordenskioldii* Heer ?, Newberry, No. 573a.  
*reichenbachi* (Gein.) Heer, Hollick, No. 370.  
*spinosa* Newb., Newberry, No. 573a.  
*Serpula intricata* White, Logan, No. 498.  
*plana*, n. sp., Logan, No. 498.  
*tenuicarinata* M. & H., Logan, No. 498.  
*Sieberella roemerii*, Hall and Clarke, No. 327.  
*Sigillaria*, Dawson, No. 223.  
*Siphonotreta* (?) *minnesotensis*, Hall and Clarke, No. 327.  
*Smilax cyclophylla* Newb., Newberry, No. 573a.  
*Solemya alabamensis* n. sp., Harris, No. 334.

## Paleontology—Continued.

*Genera and species described*—Continued.

Solen sp., Harris, No. 334.  
 Solenopleura arenosa Bill. sp., Matthew, No. 535.  
 var. angilimbata n. var., Matthew, No. 535.  
 robbii Hartt. mut. parva, Matthew, No. 535.  
 Sphaerella sp., Harris, No. 334.  
 Sphagiopora, Simpson, No. 702.  
 Sphenia Turton, Dall, No. 184.  
 attenuata n. sp., Dall, No. 184.  
 Sphenopteris corrugata Newb., Newberry, No. 573a.  
 Spirifer cameratus Morton, Beede, No. 62.  
 canandaiguæ, Hall and Clarke, No. 327.  
 crispatus, Hall and Clarke, No. 327.  
 disjunctus Sowerby, var. sulcifer, Hall and Clarke, No. 327.  
 keokuk Hall, Weller, No. 860.  
 mucronatus Conrad, var. posterus, Hall and Clarke, No. 327.  
 newberryi, Hall and Clarke, No. 327.  
 williamsi, Hall and Clarke, No. 327.  
 Spirillina orbicularis, n. sp., Bagg, No. 27.  
 Spiroloculina planulata, Bagg, No. 27.  
 Spirolecta clarki, Bagg, No. 27.  
 Spirophyton, Udden, No. 789.  
 Spisula Gray, Dall, No. 184.  
 (Hemimactra) Swainson, Dall, No. 184.  
 curtidens n. sp., Dall, No. 184.  
 delumbis Conrad, Dall, No. 184.  
 densa n. sp., Dall, No. 184.  
 dodona n. sp., Dall, No. 184.  
 duplinensis n. sp., Dall, No. 184.  
 magnoliana n. sp., Dall, No. 184.  
 marylandica n. sp., Dall, No. 184.  
 subponderosa Orbigny, Dall, No. 184.  
 (Cymbophora) Gabb, Dall, No. 184.  
 (Leptospisula) Dall, Dall, No. 184.  
 (Schizodesma) Gray, Dall, No. 184.  
 Spondylus bostrychites Guppy, Dall, No. 184.  
 dumosis Morton, Dall, No. 184.  
 echinatus Martyn, Dall, No. 184.  
 rotundatus Heilprin, Dall, No. 184.  
 sp., Harris, No. 334.  
 Sporangites huronensis Dawson (?), Girty, No. 299.  
 Squama, Logan, No. 498.  
 lata Logan, Logan, No. 498.  
 spissa Logan, Logan, No. 498.  
 Standella Gray, Dall, No. 184.  
 (Eastonia) Gray, Dall, No. 184.  
 Stegosaurus, Case, No. 135.  
 Stenognathus n. gen., Newberry, No. 573.  
 Stenopora, Simpson, No. 702.  
 Sterculia engleri n. sp., Kirchner, No. 442.  
 snowii Lesq. (?), Hollick, No. 368.  
 sp. ?, Hollick, Nos. 368, 370.  
 Stethacanthus compressus n. sp., Newberry, No. 573.  
 productus n. sp., Newberry, No. 573.  
 Stictocella, Simpson, No. 702.  
 Stictopora, Simpson, No. 702.  
 Stictoporella n. gen., Simpson, No. 702.

## Paleontology—Continued.

*Genera and species described*—Continued.

Stictoporina n. gen., Simpson, No. 702.  
 Stomatopora, Simpson, No. 702.  
 Stramentum, Logan, No. 498.  
 hawarthii Williston, Logan, No. 498.  
 tabulatum, Logan, No. 498.  
 Streblotrypa, Simpson, No. 702.  
 Streptelasma, Hall, No. 325.  
 strictum Hall, Girty, No. 300.  
 Streptorhynchus ulrichi, Hall and Clarke, No. 327.  
 williamsi n. sp., Weller, No. 860.  
 Strobilites inquirendus n. sp., Hollick, No. 370.  
 Strophalosia cymbula, Hall and Clarke, No. 327.  
 rockfordensis, Hall and Clarke, No. 327.  
 Strophomena conradi, Hall and Clarke, No. 327.  
 winchelli, Hall and Clarke, No. 327.  
 Strophonella costatula, Hall and Clarke, No. 327.  
 Stropora, Simpson, No. 702.  
 Synocladia, Simpson, No. 702.  
 Syncnodon n. gen., Osborn, No. 589.  
 sexicuspis n. sp., Osborn, No. 589.  
 Syringostoma barretti, n. sp., Girty, No. 300.  
 centrotum, n. sp., Girty, No. 300.  
 consimile, n. sp., Girty, No. 300.  
 foveolatum, n. sp., Girty, No. 300.  
 microporum, n. sp., Girty, No. 300.  
 Syringothyris missouri, Hall and Clarke, No. 327.  
 Tæniodictya, Simpson, No. 702.  
 Tæniopora, Simpson, No. 702.  
 Taxodium distichum miocenum Heer, Newberry, No. 573a.  
 occidentale Newb., Newberry, No. 573a.  
 Tectulipora, Simpson, No. 702.  
 Tectuliporella, Simpson, No. 702.  
 Teleoceras fossiger, Osborn, No. 586.  
 Teleostomes, Case, No. 133.  
 Tellina, greggi, Harris, No. 334.  
 subtriangularis, Harris, No. 334.  
 (Arcopagia) trumani n. sp., Harris, No. 334.  
 Teredina Lamarck, Dall, No. 184.  
 bowdeniana n. sp., Dall, No. 184.  
 Teredo Linné, Dall, No. 184.  
 Tetradium cellulosum Hall sp., Ruedemann, No. 674.  
 Textularia abbreviata, Bagg, No. 27.  
 agglutinans d'Orbigny, Bagg, No. 27.  
 var. porrecta Brady, Bagg, No. 27.  
 articulata, Bagg, No. 27.  
 gibbosa d'Orbigny, Bagg, No. 27.  
 globulosa Ehrenberg, Bagg, No. 27.  
 globulosa, McClung, No. 514.  
 gramen d'Orbigny, Bagg, No. 27.  
 sagittula Defrance, Bagg, No. 27.  
 subangulata, Bagg, No. 27.  
 turris d'Orbigny, Bagg, No. 27.  
 Thamniscus, Simpson, No. 702.  
 Thamnocella n. gen., Simpson, No. 702.  
 Thamnotrypa, Simpson, No. 702.

## Paleontology—Continued.

## Genera and species described—Continued.

*Thinnfeldia lesquereuxiana* Heer, Hollick, Nos. 367, 368.  
*Thuja interrupta* Newb., Newberry, No. 573a.  
*Titanichthys agassizii* Newberry, Eastman, No. 247.  
*clarkii* Newberry, Eastman, No. 247  
*Titanotherium*, Case, No. 136.  
*Torosaurus*, Case, No. 135.  
*Torynifer criticus*, Hall and Clarke, No. 327.  
*Toxochelys*, Case, No. 137.  
*brachyrhinus* n. sp., Case, No. 137.  
*latiremis*, Case, No. 137.  
*latiremis* Cope, Wagner, No. 842.  
*serrifer*, Case, No. 137.  
*Trematella*, Simpson, No. 702.  
*Trematosaurus*, Case, No. 134.  
*Trematopora*, Simpson, No. 702.  
*Trematospira tennesseensis*, Hall and Clarke, No. 327.  
*Tresus* Gray, Dall, No. 184.  
*Tricalycites papyraceus* Newb., Hollick, No. 367, 368.  
*Triceratops calicornis* n. sp., Marsh, No. 523.  
*obtusus* n. sp., Marsh, No. 523.  
*Trigonarca pulchra* var., Harris, No. 334.  
*Trinacria* C. Mayer, Dall, No. 184.  
*meekii* n. sp., Dall, No. 184.  
*Triplecia niagarensis*, Hall and Clarke, No. 327.  
*Tripleuroceras robsoni* n. sp., Whiteaves, No. 875.  
*Tripterooceras lambii*, Whiteaves, No. 875.  
*Trirachodon*, Case, No. 135.  
*Tritaxia tortilis* (Reuss), Bagg, No. 27.  
*tricarinata* (Reuss), Bagg, No. 27.  
*Tritylodon*, Case, No. 135.  
*Trochammina inflata* (Montagu), Bagg, No. 27.  
*Trohoceras insigne* n. sp., Whiteaves, No. 875.  
*Trochus cinctus* Wagner, Dall, No. 185.  
*Tropidopora*, Simpson, No. 702.  
*Truncatulina akneriana* (d'Orbigny), Bagg, No. 27.  
*haidingerii* (d'Orbigny), Bagg, No. 27.  
*lobatula* (Walker and Jacob), Bagg, No. 27.  
*refulgens* (Montfort), Bagg, No. 27.  
*ungeriana* (d'Orbigny), Bagg, No. 27.  
*variabilis*, Bagg, No. 27.  
*wuellerstorfi* (Schwager), Bagg, No. 27.  
*Tryblidium* Lindstrom 1880, Berkey, No. 74.  
*aduncum* n. sp., Berkey, No. 74.  
*barabuensis* (Whitfield), Berkey, No. 74.  
*convexum* n. sp., Berkey, No. 74.  
*corpulentum* n. sp., Berkey, No. 74.  
*extensum* n. sp., Berkey, No. 74.  
*rectilaterale* n. sp., Berkey, No. 74.  
*Tuditanus*, Case, No. 134.  
*Tugonia* Gray, Dall, No. 184.  
*compacta* n. sp., Dall, No. 184.  
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*Uintacrinus socialis* Grinnell, Logan, No. 498.  
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*Vaginulina legumen*, Bagg, No. 27.  
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*asperum* Newb., Newberry, No. 573a.  
*cuneatum* Newb., Newberry, No. 573a.  
*lanceolatum* Newb., Newberry, No. 573a.  
*Vinella*, Simpson, No. 702.  
*Vitis rotundifolia* Newb., Newberry, No. 573a.  
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[Bulletin 162.]

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The publications of the Geological Survey shall consist of the annual report of operations, geological economic maps illustrating the resources and classification of the lands, and reports upon general economic geology and paleontology. The annual report of operations of the Geological Survey shall accompany the annual report of the Secretary of the Interior. All special memoirs and reports said Survey shall be issued in uniform quarto series if deemed necessary by the Director, but otherwise in ordinary octavos. Three thousand copies of each shall be published for scientific exchanges for sale at the price of publication; and all literary and cartographic materials received in exchange shall be the property of the United States and form a part of the library of the organization; and the money resulting from the sale of such publications shall be covered into the Treasury of the United States.

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22	McMinnville .....	Tennessee ..	85° 30'-86°	35° 30'-36°	969	25
23	Nomini .....	Maryland ..	76° 30'-77°	38°-38° 30'	938	25
		Virginia ..				
24	Three Forks .....	Montana ..	111°-112°	45°-46°	3,354	50
25	Loudon .....	Tennessee ..	84°-84° 30'	35° 30'-36°	969	25
26	Pocahontas .....	Virginia ..	81°-81° 30'	37°-37° 30'	951	25
		West Va ..				
27	Morristown .....	Tennessee ..	83°-83° 30	36°-36° 30'	963	25
28	Piedmont .....	Virginia ..	79°-79° 30'	39°-39° 30'	925	25
		Maryland ..				
		West Va ..				
29	Nevada City:					
	Nevada City ..					
	Grass Valley ..	California ..	121° 00' 25"-121° 03' 45"	39° 13' 50"-39° 17' 16"	11,65	
	Banner Hill ..		121° 01' 35"-121° 05' 04"	39° 10' 22"-39° 13' 50"	12,09	
			120° 57' 05"-121° 00' 25"	39° 13' 50"-39° 17' 16"	11,65	
30	Yellowstone Na- tional Park:					
	Gallatin .....					
	Canyon .....	Wyoming ..	110°-111°	44°-45°	3,412	75
	Shoshone .....					
	Lake .....					
31	Pyramid Peak .....	California ..	120°-120° 30'	38° 30'-39°	932	25
32	Franklin .....	Virginia ..	79°-79° 30'	38° 30'-39°	932	25
		West Va ..				
33	Briceville .....	Tennessee ..	84°-84° 30'	36°-36° 30'	963	25
34	Buckhannon .....	West Va ..	80°-80° 30'	38° 30'-39°	932	25
35	Gadsden .....	Alabama ..	86°-86° 30'	34°-34° 30'	986	25
36	Pueblo .....	Colorado ..	104° 30'-105°	38°-38° 30'	938	50
37	Downieville .....	California ..	120° 30'-121°	39° 30'-40°	919	25
38	Butte Special .....	Montana ..	112° 29' 30"-112° 36' 42"	45° 59' 28"-46° 02' 54"	22,80	50
39	Truckee .....	California ..	120°-120° 30'	39°-39° 30'	925	25
40	Wartburg .....	Tennessee ..	84° 30'-85°	36°-36° 30'	963	25
41	Sonora .....	California ..	120°-120° 30'	37° 30'-38°	944	25
42	Nueces .....	Texas ..	100°-100° 30'	29° 30'-30°	1,035	25
43	Bidwell Bar .....	California ..	121°-121° 30'	39° 30'-40°	918	25

\* Out of stock.

No.	Name of sheet.	State.	Limiting meridians.	Limiting parallels.	Area, in square miles.	Price, in cents.
44	Tazewell .....	Virginia ..	81° 30'-82°	37°-37° 30'	950	25
	West Va..					
45	Boise .....	Idaho.....	116°-116° 30'	43° 30'-44°	864	25
46	Richmond .....	Kentucky	84°-84° 30'	37° 30'-38°	944	25
47	London .....	Kentucky	84°-84° 30'	37°-37° 30'	950	25
48	Tenmile District Special.	Colorado..	106° 8'-106° 16'	39° 22' 30"-39° 30' 30"	55	25
49	Roseburg.....	Oregon ...	123°-123° 30'	43°-43° 30'	871	25
50	Holyoke .....	Mass .....	72° 30'-73°	42°-42° 30'	885	50
51	Big Trees.....	Conn .....				
		California.	120°-120° 30'	38°-38° 30'	938	25

## STATISTICAL PAPERS.

Mineral Resources of the United States, 1882, by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1883 and 1884, by Albert Williams, jr. 1885. 8°. xiv, 1016 pp. Price 60 cents.

Mineral Resources of the United States, 1885. Division of Mining Statistics and Technology. 1886. 8°. vii, 576 pp. Price 40 cents.

Mineral Resources of the United States, 1886, by David T. Day. 1887. 8°. viii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1887, by David T. Day. 1888. 8°. vii, 832 pp. Price 50 cents.

Mineral Resources of the United States, 1888, by David T. Day. 1890. 8°. vii, 652 pp. Price 50 cents.

Mineral Resources of the United States, 1889 and 1890, by David T. Day. 1892. 8°. viii, 671 pp. Price 50 cents.

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Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

*"Provided, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."*

In compliance with this legislation the following reports have been published:

Mineral Resources of the United States, 1894, David T. Day, Chief of Division. 1895. 8°. xv, 646 pp., 23 pl.; xix, 735 pp., 6 pl. Being Parts III and IV of the Sixteenth Annual Report.

Mineral Resources of the United States, 1895, David T. Day, Chief of Division. 1896. 8°. xxiii, 542 pp., 8 pl. and maps; iii, 543-1058 pp., 9-13 pl. Being Part III (in 2 vols.) of the Seventeenth Annual Report.

Mineral Resources of the United States, 1896, David T. Day, Chief of Division. 1897. 8°. xii, 642 pp., 1 pl.; 643-1400 pp. Being Part V (in 2 vols.) of the Eighteenth Annual Report.

Mineral Resources of the United States, 1897, David T. Day, Chief of Division. 1898. 8°. viii, 651 pp., 11 pl.; viii, 706 pp. Being Part VI (in 2 vols.) of the Nineteenth Annual Report.

The money received from the sale of the Survey publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by MONEY ORDER, made payable to the Director of the United States Geological Survey, or in CURRENCY—the exact amount. Correspondence relating to the publications of the Survey should be addressed to—

THE DIRECTOR,

UNITED STATES GEOLOGICAL SURVEY,

WASHINGTON, D. C.

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*Second title:* United States geological survey | Charles D. Walcott, director | — | Bibliography and index | of | North American geology, paleontology, | petrology, and mineralogy | for | the year 1898 | by | Fred Boughton Weeks | [Vignette] |

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